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9
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RD
1
A38
v.23

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Index to Volume XXIII

[Titles printed in SMALL CAPITALS refer to original articles; those in lower case to abstracts; and those in *italics* to editorial articles.]

	PAGE
ABDOMEN, PENETRATING WOUND OF, WITHOUT SYMPTOMS—	
JAEGER	181
—, — wounds of	186
—, <i>Transverse Opening, Behind the Rectus Muscle</i>	340
A	
Abdominal Cavity, Sensibility of.	377
— Disease, Diagnosis in	6
— INJURY; REPORT OF AN ACCIDENT TO AN INFANT SEVENTEEN MONTHS OLD, WITH EXTENSIVE INJURY TO THE ABDOMINAL WALL AND EVISCERATION OF ALL THE SMALL INTESTINES; RECOVERY—HALL	145
— Operations, Prevention of Adhesions After	252
— Surgery, Without Detached Sponges	152
Absorbent Material, An Economical.	18
ADLER, LEWIS H., JR.—	
POLYPOID GROWTHS AND RECTAL POLYPI, WITH A REPORT OF A	

	PAGE
RECENT CASE OF FIBROMA, UNDERGOING MYXOMATOUS DEGENERATION	405
Adrenalin, Warning Against	313
— After Abortion	313
— in Intestinal Hemorrhage	153
Alexander-Adams Operation, Results of	30
ALLISON, CHARLES C.—BORDERLINE CASES IN MEDICINE AND SURGERY	39
<i>American Journal of Surgery: Announcement of Special Issues</i>	59, 371
<i>American Medical Editors Association Meeting, Notice of</i>	181
Anastomosis, Intestinal	217
Anastomosis, Intestinal, Murphy Button in	369
—, —, SOME EXPERIMENTS IN CERTAIN METHODS OF—	
GEORG	349
Anastomosis, Vessel, by Rubber Tubing	31
ANDREWS, J. W.—COLLES' FRACTURE	238
<i>Anesthesia, Bier's Venous</i>	183

	PAGE
Anesthesia, Local, in Cervix Dilation, etc.	316
—, Rectal	121
—, Sacral	156
—, Spinal and Local	376, 377
Anesthesia, Local; Intravenous	436
ANEURISM, SUB-CLAVIAN LIGATION IN	345
ANEURISMS, SURGICAL TREATMENT OF. (See FRICK.)	
Appendicitis.	364
APPENDICITIS, THE OCHSNER TREATMENT OF—BARNHILL	223
Appendicitis Coexistent With Symptoms of Right Kidney and Ureteral Irritation	251
— — AND UNDESCENDED TESTICLE. (See CANTWELL.)	
Appendicitis, Chronic	186
APPENDICOSTOMY—LYNCH	303
Appendicular Artery, Data of	152
Appendix, A Method of Enucleating the	203
APPENDIX, WHERE IS THE—MILLER, G. I.	319
Appendix Catarrh	98

	PAGE
Appendix and Gall-Bladder, Hematogenous Infection of.....	32
APPENDIX VERMIFORMIS, FIBROID DEGENERATION OF THE—MORRIS.....	317
Arteries, Ligation of Both External Iliac.....	152
Arteries and Veins, New Suture of.....	436
ARTERY, LIGATION OF THE COMMON ILIAC, UNDER UNFAVORABLE CONDITIONS—LANPHEAR.....	180
Arthritis, Muscular Atrophy in... 131	
Arthritis, Pneumococic.....	348
Articulations, Grafting of.....	346
<i>Atropine as a hemostatic; Appeal to Readers</i>	147
AUSTIN, MAYNARD A.—TROPHIC JOINT DISEASES.....	232
AXTELL, W. H.—A CASE OF EXTENSIVE CHEST INJURY; PLASTIC OPERATION; RECOVERY.....	56

B

<i>Bacteria in Normal Viscera</i>	309
Balanitis, Gangrenous.....	314
BANDLER, SAMUEL W.—FIBROSIS URERI AND ITS SURGICAL TREATMENT BY A NEW METHOD OF VAGINAL HYSTERECTOMY.....	99
BARNETT, EDWARD LEROY. TREATMENT OF TALIPES EQUINUS VARUS BY PLASTER OF PARIS....	199
BARNHILL, JAMES U.—THE OCHSNER TREATMENT OF APPENDICITIS.....	223
BELL, ERNEST L.—MOVABLE KIDNEY.....	33
BERMINGHAM, FRANCIS H.—ELECTROTHERAPEUTICS IN SOME OF THE DISEASES OF THE GENITO-URINARY TRACT.....	192
Bismuth Poisoning, and a Non-Poisonous Substitute for Bismuth.....	187
Bladder, Extrophy of.....	380
Bladder Drainage, Suprapubic; Fistula for.....	216
BLAND, P. BROOKE.—THE DIAGNOSIS AND TREATMENT OF EXTRAUTERINE PREGNANCY.....	397
Blastomycosis.....	249
Blood, Coagulation Time of, and Factors Influencing.....	380
—, Tubercle Bacillus in.....	313
BLOOD TRANSFUSION, THE AVOIDANCE OF HEMOLYSIS IN—REHLING AND WILE.....	96
— — THE DIRECT OPERATION OF; DESCRIPTION OF A SIMPLE METHOD—HARTWELL.....	92
— — Frank Method of.....	61
Blood Serum, Antitryptic Content of, in Malignant Disease.....	218
Bloodvessel Surgery.....	62
—, See also Transplantation.	
Bloodvessels, Peripheral, in Shock.	62
Bone Transference.....	249
Bone, Transplantable, Bacteria-free.....	377
Bones and Joints, Free Transplantation of.....	340
BONIFIELD, CHARLES LYR-BRAND—FIBROIDS AND PREGNANCY.....	300
BOOK REVIEWS:	
Adami.—The Principles of Pathology. v. 1.....	433
Aichel, O.—Eine Neue Hypothese Über Ursachen u.	

Wesen Bösartiger Geschwulste.....	150
Albarran, J.—Medecine Operatoire Des Voies Urinaires..	124
Albright, J. D.—Practical Treatise on Rectal Diseases. 342	
Atlas U. Grundriss d. Röntgendiagnostik in Der Inneren Medizin.....	311
Ballet, G.—Neurasthenia....	375
Bennett, Sir W. H.—Lectures on the Use of Massage and Early Movements in Recent Fractures.....	247
Bickham, W. S.—Text-book of Operative Surgery.....	27
Bonney, S. G.—Pulmonary Tuberculosis and Its Complications.....	60
Brewer, G. E.—Text-book of Surgery.....	375
Brickner, W. M.; Moschowitz and Hays—Seven Hundred Surgical Suggestions, third series.....	61
Burghard.—System of Operative Surgery. v. 2.....	434
Cabot, F.—Clinical Diagnosis and Treatment of Disorders of the Bladder; with Technic of Cystoscopy.....	184
Camac, G. N. B.—Epoch-making Contributions to Medicine, Surgery, and the Allied Sciences.....	184
Cattell, H. W.—Post-mortem Pathology.....	344
Clough, S. DeW.—Backbone..	185
Cooper.—Sexual Debilities of Man and Their Treatment.	434
DaCosta, J. C.—Principle and Practice of Physical Diagnosis.....	151
Davis, E. P.—Obstetrics and Gynecologic Nursing.....	124
Deaver and Ashhurst—Surgery of the Upper Abdomen, v. 1.....	184
Dieudonné, A.—Bacterial Food Poisoning.....	151
Douglas, R.—Surgical Diseases of the Abdomen.....	184
Downie.—Clinical Manual for the Study of Diseases of the Throat.....	433
Dubois, P.—Psychic Treatment of Nervous Disorders.	376
Ehrlich, P.—Experimental Researches on Specific Therapeutics.....	247
Emery, W. DeE.—Immunity and Specific Therapy.....	373
Friedenwald, J.—Diet in Health and Disease.....	344
Gant, S. G.—Constipation and Intestinal Obstruction....	342
Goldthwaite, Painter and Osgood—Diseases of the Bones and Joints.....	372
Gould, G. M.—Borderland Studies.....	151
Grandmaison, F. de—Les Regimes.....	279
Green and Brooks—Diseases of the Genito-Urinary Organs and the Kidney, second ed.....	61
Gulick and Ayres—Medical Inspection of Schools.....	29
Gynæcologica Helvetica. v. 9, pt. 1.....	310

Herter, C. A.—On Infantilism from Chronic Intestinal Infection.....	279
Hirschman, L. J.—Hand-book of the Diseases of the Rectum.....	342
International Medical Annual, 1908.....	185
— Society of Surgery, Second Congress.....	343
Jordan, E. O.—Text-book of General Bacteriology.....	150
Keen, W. W.—Surgery: Its Principles and Practise....	246
Kelly, H. A.—Appendicitis and other Diseases of the Vermiform Appendix.....	214
—, Myomata of the Uterus.	310
Kerley, C. G.—Treatment of the Diseases of Children. Second ed.....	344
Kimber, D. C.—Text-book of Anatomy and Physiology for Nurses.....	375
Knight and Bryant.—Diseases of the Nose, Throat and Ear.....	434
Kopetzky, S. J.—The Surgery of the Ear.....	28
Leopold, G.—A Very Young Ovum in Situ.....	280
Lexter, E.—General Surgery..	27
Liepmann, W.—Tabellen zu Klinisch - Bacteriologischen Untersuchungen für Chirurgen und Gynäkologen....	151
Lister, J., Baron—Collected papers of Joseph, Baron Lister. v. 1-2.....	372
Lockard, L. B.—Tuberculosis of the Nose and Throat....	374
MacFarlane, C.—Reference Handbook of Gynecology for Nurses.....	61
McIsaac, I.—The Elements of Hygiene for Schools.....	247
Marriage and Disease, edited by Senator and Kaminer....	310
Martin, E.—Surgical Diagnosis.....	373
May, C. H.—Manual of the Diseases of the Eye.....	375
Miller, C. C.—Cosmetic Surgery.....	280
Meyer, W.—Bier's Hyperemia Treatment in Surgery.....	310
Neusser, E. v.—Clinical Treatises on the Symptomatology and Diagnosis of Disorders of Respiration and Circulation.....	344
New York Charities Directory; compiled by H. R. Hurd.....	124
Nouveau Traité de Chirurgie; LeDentu et Delbet, ed.—	
Fasc. 7. Maucalre et Du-jarier: Maladies des Articulations.....	29
Fasc. 11. Launay et Bro-dier: Maladies des Veines et des Lymphatiques.....	280
Fasc. 13. Auvray: Maladies du Crane et de l'Encéphale.....	150
Fasc. 18. Castex et Lubet-Baron: Oto-rhino-laryngologie.....	185
Physician's Visiting List....	434
Politzer, A.—Text-book of the Diseases of the Ear.....	374

	PAGE
Practical Medical Science Series, v. 2: General Surgery, ed. by J. B. Murphy.....	215
Precis de Pathologie Chirurgicale. Tome 1-2.....	124
Preiswerk, C.—Lehrbuch u. Atlas d. Zahnheilkunde.....	29
Presbyterian Hospital, N. Y.: Medical and Surgical Report, v. 8.....	247
Ritchie.—Primer of Sanitation.....	434
Saunders' Pocket Medical Formulary.....	185
Schamberg, J. F.—Diseases of the Skin, and Eruptive Fevers.....	60
Schorer, E. H.—Vaccine and Serum Therapy.....	279
Schultze, O.—Atlas u. Grundriss d. topographischen u. angewandten Anatomie (Lehmann's medizinische Atlanten, Bd. 1), 2d ed....	124
Second Congress of the International Society of Surgery.....	343
Snow, W. B.—Therapeutics of Radiant Light and Heat....	185
Spencer.—Practical Guide to the Examination of the Ear.....	434
Strauss, H.—Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition, pt. 8.....	344
System of Operative Surgery; ed. by F. F. Burghard, v. 1, 4.....	278, 343
Talmey, B. S.—Woman.....	29
Treves, Sir F.—Manual of Operative Surgery, 3d ed....	278
Walsh, J. J.—The Popes and Science.....	214
Warbasse, J. P.—Medical Sociology.....	374
Waring, H. J.—Manual of Operative Surgery.....	215
Wells, H. G.—Tono-Bungay: A Novel.....	247
Wile, I. S.—Blood Examination in Surgical Diagnosis.....	28
Winter, G.—Text-book of Gynecological Diagnosis....	150
Wright, Sir A. E.—Studies on Immunization.....	280
Zeitschrift für Gynäkologische Urologie.....	29
Zimmern, A.—La Fulguration. Le Valeur Thérapeutique...	376
Bowel, Lilienthal's Method of Closing the Divided.....	122
Bowel, Lower, Treatment of....	139
BRAIN ABSCESS, SOME REMARKS ON: REPORT OF TWO CASES; WITH DEATH FROM INSUFFICIENT EXPLORATION—MAGIE.....	293
BRAIN ABSCESS, OTITIC; SOME NOTES ON—BRYANT.....	292
— injury.....	314
— tumors.....	348
Breast, Hypertrophy of the female.....	64
Breast Cancer. (See Carcinoma, MEYER.)	
BRICKNER, SAMUEL M.—EPHRAIM McDOWELL in 1809....	211
—, — SOME ACCIDENTS AND COMPLICATIONS OF GYNECOLOGICAL OPERATIONS ..	259

	PAGE
BRICKNER, WALTER M.—ON THE SURGERY OF FOREIGN BODIES, WITH SPECIAL REFERENCE THOSE OCCURRING IN THE SKELETAL TISSUES: INCLUDING THE DESCRIPTION OF A LOCALIZING METHOD.....	81
BROTHERS, ABRAM—REPORT OF A CASE FROM WHICH 215 GALL STONES WERE REMOVED SIMULTANEOUSLY WITH OPERATIONS ON CERVIX UTERI AND UTERINE ADNEXA.....	142
BRYANT, W. SOHIER—SOME NOTES ON OTITIC BRAIN ABSCCESS.....	292
Bubo, Operative Treatment....	155
Bull, William T., Memorial... 123, 213	
Burns and skin defects, Hydriatic Treatment.....	315
Bursitis, Subacromial.....	187
Calculi, Ureteral.....	216, 248
Calculus of Kidney.....	32
— Hematuria in.....	366
CALDWELL, E. W.—A BRIEF REVIEW OF THE APPLICATIONS OF RÖNTGEN RAYS IN DIAGNOSIS... 397	
Cambridge Reaction in Pancreatic Diseases.....	26
CAMPBELL, JAMES L.—THROMBOSIS OF THE POPLITEAL AND ANTERIOR AND POSTERIOR TIBIAL ARTERIES COMPLICATING AN APPENDICULAR ABSCESS.....	143
CAMPBELL, WILLIAM FRANCIS—CONGENITAL SACRAL TUMOR, WITH REPORT OF A CASE... 207	
CANCER, THE, PROBLEM FROM A SURGICAL VIEWPOINT, WITH A POSSIBLE EXPLANATION OF THE REMARKABLE FREEDOM OF THE DUODENUM FROM CANCER INVASION—WESTBROOK.....	286
CANCER OF THE BREAST—MEYER... 77	
— OF THE STOMACH; A STATISTICAL STUDY.—McGLINN.....	426
Cancer Serum of Patients, Auto-genous Antiphylactic Antibody in.....	347
Cancer. (See also Carcinoma.)	
CANTWELL, F. V.—INFLAMED UNDESCENDED TESTICLE CAUSING OR SIMULATING APPENDICITIS; APPENDICITIS, A CAUSE OF UNDESCENDED TESTICLE: CASE REPORT.....	322
Carcinoma, Skin-reaction in, from Injection of Red Blood Calls... 188	
Carcinoma, Breast.....	139
— ESOPHAGEAL—LANG.....	235
— Gastric; Early (Diagnosis, 57; Biological Investigations of.....	284
— Heart.....	154
— Lip.....	154
— Rectum, 188; Metastatic....	205
— Tongue.....	154
— UTERUS; EARLY DIAGNOSIS OF—WATKINS.....	128
— — Inoperable.....	316
Carcinoma, Osteoplastic, of prostate.....	315
Carcinoma. (See also Cancer.)	
CATARACT OPERATION, THE PRESENT STATUS OF.—POSEY.....	418
CEREBELLAR ABSCESS. (See MCCOY.)	
Cerebral Compression, Surgical Aspects of.....	378

	PAGE
— Tumors, Combining Exploration and decompression for.....	347
Cervical Plexus, Paralysis of Lower Roots of.....	347
Cesarian Section, Extraperitoneal.....	188
CHEST INJURY, A CASE OF EXTENSIVE; PLASTIC OPERATION; RECOVERY—AXTELL.....	56
Cholecystectomy vs. Cholecystotomy.....	155
Cholelithiasis, Drugs in.....	39
CHRISTIAN, H. M.—THE POST-OPERATIVE TREATMENT OF URETHROTOMY, INTERNAL AND EXTERNAL.....	425
COCKS, GERHARD H.—SUBMUCOUS RESECTION OF THE NASAL SEPTUM; NEED OF MORE CONSERVATISM IN SELECTION OF CASES: TECHNIC OF OPERATION.. 46	
Colon Tube and the High Enema — Ascending; Tuberculous Tumor of.....	345
Colostomy, Sphincteric Control After.....	315
— Temporary, in Fecal Fistula.....	152
CONNORS, JOHN F.—REMARKS ON THE SURGICAL TREATMENT OF CHRONIC NEPHRITIS.....	330
Cranial Technic.....	62
CYCLODIALYSIS.—PYLE.....	422
Cyst, Urachal, Simulating Appendicular Abscess.....	284
Cystic Artery, Control of Hemorrhage from.....	155
CYSTITIS, REMARKS ON—RATHBUN.....	136
D	
DAVIS, BYRON B.—ON THE SURGICAL RELATIONS OF THE INTESTINAL GASES, WITH DEDUCTIONS CONCERNING PRE- AND POST-OPERATIVE TREATMENT.... 354	
DAVIS, EDWARD P.—THE SURGICAL TREATMENT OF HEMORRHAGE COMPLICATING PREGNANCY.....	391
DEAFNESS, CATARRHAL, AND ITS TREATMENT—GEYSER.....	7
DELATOUR, H. BEECKMAN—SURGERY OF THE PERICARDIUM AND HEART.....	114
Diagnostic Refinement, The Dangers of.....	431
Diaphragm, Hernia of.....	376
— Spasm of.....	377
Digestive Tract, Ulcers of the Upper.....	250
Distension, Post-operative.....	31
Diverticula, False, of the Large Intestine.....	156
DUNCAN, CHARLES H.—SCAR TISSUE: ITS PREVENTION AND OBLITERATION.....	165
DUNSMOOR, F. A.—THE VERSATILE OMENTUM.....	205
Duodenal Ulcer. (See Gastric and Duodenal Ulcer.)	
EAR, INTERNAL; NEW METHODS OF TESTING THE, ESPECIALLY THE FUNCTIONATING CONDITION OF THE SEMICIRCULAR CANAL SYSTEM; ALSO SOME DIFFERENTIAL DIAGNOSTIC SIGNS OF CEREBELLAR ABSCESS AND TUMOR—MCCOY... 333	
—, Middle; Purulent Diseases of.....	220

	PAGE
<i>Eclampsia, Puerperal; Renal Decapsulation in</i>	245
— TREATMENT OF—HOLDEN.....	367
EDITORIALS:	
<i>Additions to the Technic of Skin-grafting</i>	182
<i>Bacteria in Normal Viscera</i>	309
<i>Bier's Venous Anesthesia</i>	183
<i>The Conservative Treatment of Intestinal Obstruction</i>	308
<i>The Dangers of Diagnostic Refinement</i>	431
<i>Differential Pressure in Intrathoracic Surgery</i>	244
<i>Exploratory Laparotomy</i>	432
<i>Facial Paraffin Injections</i>	26
<i>Free Transplantation of Bones and Joints</i>	340
<i>Gastric Diagnosis and the Test meal</i>	370
<i>Joint Tuberculosis</i>	370
<i>Journal de Chirurgie</i>	308
<i>Ligation of the Veins for Purulent Pylephlebitis Following Appendicitis</i>	309
<i>Lilienthal's Method of Closing the Divided Bowel</i>	122
<i>The Management of Placenta Previa</i>	149
<i>The Modern View of the Treatment of Fractures</i>	122
<i>Modifications in Inguinal Herniotomy</i>	148
<i>A Notable Advance in Pharyngo and laryngoscopy</i>	182
<i>Pancreatic Diseases and the Cammidge Reaction</i>	26
<i>Pediatric Surgery</i>	276
<i>Recent Studies of Hemolysis in Its Relations to Malignant Growths</i>	58
<i>Renal decapsulation in Puerperal Eclampsia</i>	245
<i>The Talma Operation for Cirrhosis of the Liver</i>	212
<i>Transverse Opening of the Abdomen Behind the Rectus Muscle</i>	340
<i>The Treatment of Fractures</i>	277
<i>Volvulus</i>	244
<i>The William T. Bull Memorial</i>	213
EISIN, EUGENE H.—REPORT OF A CASE OF PULMONARY EMBOLISM FOLLOWING INJECTION OF SALICYLATE OF MERCURY IN ALBOLINE	21
ELBOW JOINT, EXCISION OF THE: REPORT OF TWO CASES—SHIELS.....	54
ELECTRO-THERAPEUTICS IN SOME OF THE DISEASES OF THE GENITO-URINARY TRACT—BERMINGHAM.....	192
ELIOT, ELLSWORTH, JR.—ACUTE PERFORATING GASTRIC AND DUODENAL ULCER. (Concluded from Dec., 1908).....	22
EMBOLISM, PULMONARY, AFTER INJECTIONS OF MERCURY-SALICYLATE SUSPENSIONS—GOTTHEIL.....	38
— — FOLLOWING INJECTION OF SALICYLATE OF MERCURY IN ALBOLINE: REPORT OF A CASE—EISING	21
Embolus, Removal, from Common Iliac Artery	281
Emphysema, Pulmonary; Chondrectomy for	377
Emphysema, Thoracic Sinus Following	379

	PAGE
ENDO-ANEURISMORRHAPHY, INDICATIONS FOR OBLITERATIVE IN CONTRADISTINCTION TO RECONSTRUCTIVE—FRICK	241
ENTERO-ENTEROSTOMY. (See PETH, V. and PLETH, VERA W.)	
Epidermalization by "Scharlach" Ointment.	31
EPILEPSY, SURGICAL TREATMENT OF, WITH REPORT OF A CASE—SHIELS	209
— —	186
Epiploitis, Following Radical Cure for Hernia	186
Epithelioma of Right Ovary in a Child	281
ERDMANN, JOHN F.—ACUTE PANCREATITIS: SYMPTOMS AND TREATMENT.	189
ERYTHEMA, VISCERAL CRISES IN. (See SILVER.)	
Ethmoiditis	275
Evisceration, Accidental. (See HALL.)	
F	
Fecal Fistula, Post-operative; Colostomy in	152
Feces, Occult Blood in	300
FIBROIDS AND PREGNANCY—BONFIELD.	300
FIBROSIS UTERI AND ITS SURGICAL TREATMENT BY A NEW METHOD OF VAGINAL HYSTERECTOMY—BANDLER.	99
FLUORESCENT SALTS (EOSIN, SCARLET RED, ETC.), THEIR USE IN THE PRACTICE OF SURGERY—PLETH AND PLETH.....	162
FOOT, WEAK; PRACTICAL DEDUCTIONS REGARDING—KEPLER.....	203
FOREIGN BODIES, ON THE SURGERY OF; WITH SPECIAL REFERENCE TO THOSE OCCURRING IN THE SKELETAL TISSUES: INCLUDING THE DESCRIPTION OF A LOCALIZING METHOD—W. M. BRICKNER.....	81
— — IN THE AIR PASSAGES, TRACHEOTOMY FOR. (See WESTMORELAND.)	
Fracture, COLLES—ANDREWS.....	238
Fracture of Carpal Scaphoid.....	284
— Neck of Femur, Whitman's Reduction	238
<i>Fractures, The Modern View of the Treatment of</i>	122
— Nerve Involvement in.....	220
— Treatment of	277
FRACTURES OF THE RADIAL SHAFT, ROTATION DEFORMITY (OCCURRENCE AND DIAGNOSIS) AND ALUMINUM PLATES—THOMAS.....	266
Fractures, Skull	314
— Thigh, Ambulatory Treatment of.....	250
Freezing in Therapeutics.....	282
FRICK, W. J.—THE INDICATIONS FOR OBLITERATIVE IN CONTRADISTINCTION TO RECONSTRUCTIVE ENDO-ANEURISMORRHAPHY	241
FRIDENBERG, PERCY—THE ORBITAL ROUTE TO THE ACCESSORY SINUSES	227
G	
Gall Stone Operations, Turpentine in	64

	PAGE
GALL STONES, REPORT OF A CASE FROM WHICH 205 WERE REMOVED SIMULTANEOUSLY WITH OPERATIONS ON CERVIX UTERI AND UTERINE ADNEXA—BROTHERS.....	142
Gall-stones in the Urinary Bladder.	152
Gastric Diagnosis, Test Meal in.....	377
<i>Gastric Diagnosis and the Test Meal</i>	370
Gastric Ulcer.....	329
GASTRIC AND DUODENAL ULCER, ACUTE, PERFORATING—ELIOT. (Concluded from Dec., 1908).....	22
Gastric and Duodenal Ulcers.....	243
Gastritis, Septic, of Buccal Origin.....	347
Gastro-enterostomy, Basting Suture in.....	347
— — (See PLETH, V. and PLETH, VERA W.)	
Gastro-intestinal Hemorrhage, Post-operative.	32
GEORG, CONRAD—SOME EXPERIMENTS IN CERTAIN METHODS OF INTESTINAL ANASTOMOSIS.....	349
GEYSER, A. C.—CATARRHAL DEAFNESS AND ITS TREATMENT.....	7
Glanders, Chronic, in Man.....	252
Goitre, Disappearance Following Adenoidectomy	156
—, Malignant Degeneration in.....	42
Goitre with Surgical Treatment of Hyperthyroidism.....	345
Goitre Operations, Accidents in.....	156
Gonorrhea, Treatment, in France.....	248
GOTTHEIL, WILLIAM S.—ON PULMONARY EMBOLISM AFTER INJECTIONS OF MERCURY SALICYLATE SUSPENSIONS.....	38
GRABER, S. S.—THE DIAGNOSTIC INDICATIONS OF UTERINE BLEEDING.....	10
— THE VALUE OF VAGINAL FIXATION IN PROCIDENTIA.....	131
Gunshot Wounds, Lung Suture in.....	316
GYNCOLOGICAL OPERATIONS, SOME ACCIDENTS AND COMPLICATIONS OF—BRICKNER, S. M.....	259
Gynecology, Dry Heat in.....	315
H	
Hairs, Superfluous; Method of Removal.....	315
HALL, RUFUS B.—REPORT OF AN ACCIDENT TO AN INFANT SEVENTEEN MONTHS OLD, WITH EXTENSIVE INJURY TO THE ABDOMINAL WALL, AND EVISCERATION OF ALL THE SMALL INTESTINES; RECOVERY.....	145
Hallux Valgus, Osteotomy of the Cuneiform for	187
HARLAN, EARL—A RÉSUMÉ OF THE VARIOUS OPERATIVE TECHNIQUES FOR DISLOCATED KIDNEY, AND THE APPLICATION OF EACH.....	324
HARTWELL, JOHN A.—THE OPERATION OF DIRECT BLOOD TRANSFUSION: DESCRIPTION OF A SIMPLE METHOD.....	92
HAYS, HAROLD—TWO CASES OF SEPTICEMIA FOLLOWING SUBMUCOUS RESECTION OF THE NASAL SEPTUM; ONE DEATH, ONE RECOVERY.....	360
—, —, AN ELECTRICALLY LIGHTED PHARYNGOSCOPE: A NEW METHOD OF EXAMINING THE NASOPHARYNX AND LARYNX.....	174

	PAGE
Head and Neck, Soft Tissues of; Spread of Infection and Edema from the Primary Focus.....	430
HEART SURGERY. (See DELA-TOUR.)	
— Wounds, Suture.....	188
<i>Hemolysis in Its Relation to Malignant Growths, Recent Studies of.</i>	58
Hemorrhage, "Open Ulcer".....	307
Hemorrhage, Post-partum.....	316
— — (See also MOMBURG.—PREGNANCY.)	
Hernia, Deep Tenderness in.....	110
Hernia, Femoral, New Operation, 347; Roux Operation.....	348
— Inguinal, Intramuscular.....	187
— —, A MODIFIED OPERATION FOR—SELLENINGS.....	110
Herniotomy in Children.....	312
<i>Herniotomy, Inguinal; Modifications in.</i>	148
HIRST, BARTON COOKE.—TUMORS OF THE URETHRA IN WOMEN, WITH SPECIAL REFERENCE TO MALIGNANT GROWTHS..	388
HITSCHLER, WILLIAM A.—THE CONSERVATION OF THE MIDDLE TURBINATE.....	416
HOLDEN, FREDERICK C.—TREATMENT OF ECLAMPSIA.....	367
HOPKINS, FRANK TUCKER.—A PLASTIC MASTOID OPERATION; A NEW OPERATION FOR PLASTIC MASTOIDITIS.....	108
HUMPHREYS, G. A.—OBSERVATIONS ON PRURITIS ANI.....	253
Hydronephrosis, Renal Blood Vessels in.....	251
Hyperalgesia, Cutaneous, in Abdominal Disease.....	64
Hypophysis Tumor With Operative Recovery.....	435
HYSTERECTOMY, VAGINAL, A NEW METHOD. (See BANDLER.)	
I	
Ileus, Post-operative.....	37
Intestinal Gases, On the Surgical Relations of, with Deductions Concerning Pre- and Post-operative Treatment—Davis.....	354
— Localization.....	186
— Obstruction, Conservative Treatment of.....	308
— Perforation, Diagnosis.....	153
— RESECTION, PRELIMINARY REPORT OF A SIMPLIFIED METHOD—LILIENTHAL.....	65
INTESTINAL SURGERY, A CONTRIBUTION TO: ASEPTIC INTESTINAL ANASTOMOSIS (ENTERO-ENTEROSTOMY AND GASTRO-ENTEROSTOMY)—PLETH, V., AND PLETH, V. W.....	221
Intraocular Disease.....	219
<i>Intrathoracic Surgery, Differential Pressure in.</i>	244
ISAACS, A. E.—EXCISION OF STERNUM FOR SARCOMA.....	291
J	
JAEGER, CHARLES H.—PENETRATING WOUND OF THE ABDOMEN WITHOUT SYMPTOMS: A CASE REPORT.....	181
Jejuno-colic Fistula.....	281
JENNINGS, JOHN EDWARD.—OPERATION FOR INGROWING TOE-NAIL.....	163

	PAGE
JOINT DISEASES, TROPHIC—AUTIN.....	231
Joint Transplantation.....	348
— — (See also Bone and Joint Transplantation.)	
Joints, Ankylosed, Animal Membrane in.....	379
— (See also Knee, Tuberculosis Joints.)	
<i>Journal de Chirurgie.</i>	308
K	
KEPPLER, CARL R.—PRACTICAL DEDUCTIONS REGARDING WEAK FOOT.....	203
KIDNEY DISLOCATED; A RÉSUMÉ OF THE VARIOUS OPERATIVE TECHNIQUES FOR, AND THE APPLICATION OF EACH—HARLAN.....	324
— MOVABLE—BELL.....	33
— — Operation for.....	216
— Sigmoid.....	64
— (See also Nephritis, Renal.)	
Knee, Injury to the Semilunar Cartilages.....	187
Knee Joint, Infections.....	32
— — Operative Mobilization of.....	378
— — Proliferation in.....	218
KOPETZKY, S. J.—TWO TYPICAL CASES OF SINUS THROMBOSIS..	48
L	
Labyrinth, Reactions of, in Suppurative Labyrinthitis.....	62
— Surgery of.....	63
— (See also Ear, etc.)	
Lactic Acid Bacteria, Cases Treated with.....	252
LANG, WILLIAM P.—ESOPHAGEAL CARCINOMA.....	235
LANPHEAR, EMORY—LIGATION OF THE COMMON ILIAC ARTERY UNDER UNFAVORABLE CONDITIONS: A CASE REPORT.....	180
<i>Laparotomy, Exploratory.</i>	432
LAPLACE, ERNEST.—RELATION OF RECTAL DISEASES TO THE GENERAL NERVOUS SYSTEM.....	411
Laryngeal Examination. (See HAYS.)	
— STENOSIS; A CASE IN THE ADULT, SUCCESSFULLY TREATED BY INTUBATION; CONTINUOUS WEARING OF TUBE FOR FOUR YEARS.—SIMPSON.....	140
Laryngeal Nerve, Left Recurrent; Paralysis of.....	156
Leg, Congenital Pseudarthrosis of	435
LEONARD, CHARLES LESTER.—THE ROENTGEN TREATMENT OF MALIGNANT DISEASE..	413
LESSER, A. MONAE—A MODIFIED OPERATION FOR INGROWING TOE-NAIL.....	43
LESTER, JOHN C.—THE CORRECTION OF EXTERNAL NASAL DEFORMITIES: REPORT OF A CASE..	19
LEWIS, JOSEPH S.—REMARKS ON THE OPERATIVE TREATMENT OF SAPHENOUS INSUFFICIENCY..	198
LILIENTHAL, HOWARD—INTESTINAL RESECTION: PRELIMINARY REPORT OF A SIMPLIFIED METHOD.....	65
<i>Lilienthal's Method of Closing the Divided Bowel.</i>	122
Lip, Congenital Recesses of Lower.	378
Lipoma of the Foot.....	252

	PAGE
Lipoma, Retroperitoneal.....	378
<i>Liver, Cirrhosis of; The Palma Operation for.</i>	212
Lymphadenitis, Acute Pectoral..	219
LYNCH, JEROME M.—APPENDICOSTOMY,.....	303
M	
McCOY, JOHN—New Methods of Testing the Internal Ear, Especially the Functionating Condition of the Semicircular Canal System; also Some Differential Diagnostic Signs of Cerebellar Abscess and Tumor.....	333
<i>McDowell, Ephraim, Centenary.</i>	211
McGLINN, JOHN A.—CANCER OF THE STOMACH, A STATISTICAL STUDY.....	426
MACLEOD, JAMES A.—THE DIAGNOSIS OF EXTRAUTERINE PREGNANCY, AND A REPORT OF A CASE OF PRIMARY OVARIAN PREGNANCY.....	50
MACWHINNIE, A. MORGAN—SPOON ENUCLEATION OF THE TONSIL.....	363
MAGIE, W. H.—SOME REMARKS ON ABSCESS OF THE BRAIN; REPORT OF TWO CASES, WITH DEATH FROM INSUFFICIENT EXPLORATION.....	293
MALIGNANT DISEASE. (See LEONARD.)	
Mammary Gland, Fibro-epithelial Changes in.....	153
Mastoid Disease, Blood Cultures in.....	397
MASTOID OPERATION, A PLASTIC; A NEW OPERATION FOR ACUTE MASTOIDITIS—HOPKINS.....	108
MASTOIDITIS, ACUTE; A CASE COMPLICATED BY SIGMOID SINUS THROMBOSIS, EXTRADURAL ABSCESS, ENCEPHALITIS AND MENINGITIS: OPERATION; RECOVERY—OPPENHEIMER.....	44
MEDICINE AND SURGERY, BORDERLINE CASES IN—ALLISON.....	39
Meningitis, Spinal.....	218
Mercury Salicylate, Embolism After. (See EISING, GOTTHEIL.)	
Mesenterio-mesencolic Ligament and Ileus.....	436
Metatarsalgia, Anterior.....	187
MEYER, WILLY—CANCER OF THE BREAST.....	77
MILLER, GEORGE I.—WHERE IS THE APPENDIX?.....	319
MILLER, HAROLD A.—PLACENTA PREVIA CENTRALIS.....	12
Momburg's Method of Ischemia, 281; Mechanically Induced Anemia.....	346
— — in Hemorrhage Post-partum.....	346
— — in Hypogastric Laparotomy.....	281
— — in Uterine Hemorrhage.....	153
MONTGOMERY, E. E.—THE DIAGNOSIS AND TREATMENT OF RETRODISPLACEMENT OF THE UTERUS.....	381
MORRIS, ROBERT T.—FIBROID DEGENERATION OF THE APPENDIX VERIFORMIS.....	317
Mouth, Diagnosis of Lesions.....	154

	PAGE
MUREN, G. MORGAN—UROGENITAL TUBERCULOSIS: A PLEA FOR EARLY DIAGNOSIS AND CONSERVATIVE TREATMENT.....	335
N	
Narcosis, Mixed	68
—, Morphine	161
NASAL DEFORMITIES, THE CORRECTION OF EXTERNAL; REPORT OF A CASE—LESTER	19
NASAL SEPTUM, SUBMUCOUS RESECTION OF; NEED OF MORE CONSERVATISM IN SELECTION OF CASES. TECHNIC OF OPERATION—COCKS	46
—, —, — TWO CASES OF SEPTICEMIA FOLLOWING, WITH ONE DEATH, ONE RECOVERY....	360
NEPHRITIS, CHRONIC; REMARKS ON THE SURGICAL TREATMENT OF—CONNORS	330
Nerves, Injuries to.....	412
Neuralgia, Trifacial; Osmic Acid Injections in	188
Nitrous Oxide-oxygen vs. Ether.	421
Nose, Foreign Bodies in.....	240
Nose and Throat. (See SURGICAL SUGGESTIONS	27
O	
OCHSNER TREATMENT OF APPENDICITIS. (See BARNHILL).....	223
Omentum, Inflammatory Tumors of	281
—, THE VERSATILE—DUNSMOOR.	205
Operations, Before	362
OPPENHEIMER, SEYMOUR—A CASE OF ACUTE MASTOIDITIS, COMPLICATED BY SIGMOID SINUS THROMBOSIS, EXTRADURAL ABSCESS, ENCEPHALITIS AND MENINGITIS: OPERATION; RECOVERY..	44
Ossifications, Post-traumatic.....	346
Osteomyelitis of Lower Jaw.....	435
Otology, Lumbar Puncture in....	63
Oxygen, Intra-abdominal Injection of	251
P	
Palato-Pharyngeal Contractures, Plastic Operation for.....	345
Pancreatic Diseases and the Cammidge Resection	26
— — —	155
PANCREATITIS, ACUTE; SYMPTOMS AND TREATMENT—ERDMANN....	189
Paraffin Injections, Facial.....	26
— Prosthesis, 44; Histo-pathology of	31
Paralysis, Obstetrical	64
Patient, Resistance of.....	354
Pediatric Surgery	276
Pellagra, Blood Transfusion in....	284
Pelvic Outlet, Female; Repair of.	30
PERICARDIUM AND HEART, SURGERY OF THE—DELATOUR	114
Perineal Lacerations, Prevention..	347
Peritonitis, Cecostomy and Coloclysis in	251
Peritonitis Due to Appendicitis..	107
Peritonitis, Diffuse Suppurative....	283
Peritonsillar Abscess, Galvanocautery in	312
Peroneal Tendons, Dislocation of.	250
PERRY, RALPH St. J.—A PARAFFINED MESH FOR RETAINING SKIN-GRAFTS	243

	PAGE
PHARYNGOSCOPE, AN ELECTRICALLY LIGHTED, A NEW METHOD OF EXAMINING THE NASO-PHARYNX AND LARYNX—HAYS	174
Pharyngo- and Laryngoscopy, A Notable Advance in.....	183
Phlegmons of the Hand.....	219
PINGREE, H. A.—THE CONSERVATIVE TREATMENT OF TUBERCULOSIS JOINTS	194
Placenta Previa, The Management of	149
— — Treatment of	31
PLACENTA PREVIA CENTRALIS—MILLER, H. A.....	12
PLETH, V. AND PLETH, VERA W.—A CONTRIBUTION TO INTESTINAL SURGERY. ASEPTIC INTESTINAL ANASTOMOSIS (ENTEROENTEROSTOMY AND GASTROENTEROSTOMY)	221
— — — THE USE OF FLUORESCENT SALTS (EOSIN, SCARLET, RED, ETC.) IN THE PRACTICE OF SURGERY	162
Pneumonia, "Unresolved"	177
POLYPOID GROWTHS AND RECTAL POLYPI, WITH A REPORT OF A RECENT CASE OF FIBROMA, UNDERGOING MYXOMATOUS DEGENERATION.—ADLER	405
POSEY, WILLIAM CAMPBELL.—THE PRESENT STATUS OF THE CATARACT OPERATION... ..	418
Pott's Disease at the Sea Breeze Hospital	283
HEMORRHAGE COMPLICATING; THE SURGICAL TREATMENT OF.—DAVIS	391
PREGNANCY, EXTRA-UTERINE; THE DIAGNOSIS OF; AND A REPORT OF A CASE OF PRIMARY OVARIAN PREGNANCY—MACLEOD	50
— — THE DIAGNOSIS AND TREATMENT OF.—BLAND..	397
PREGNANCY WITH FIBROIDS. (See BONIFIELD.)	
PROCIDENTIA, THE VALUE OF VAGINAL FIXATION IN—GRABER.....	131
PROSTATE, THERAPY OF THE—STERN	134
Prostatic Surgery, Glass Drainage Tubes in	248
PRURITIS ANI, OBSERVATIONS ON—HUMPHREYS	253
Puerperal Pyemia	218
Pulmonary Vein, Injury of.....	313
PYLE, WALTER L.—CYCLODIALYSIS	422
Pylephlebitis, Ligation of the....	312
Veins in	312
Pylephlebitis, purulent; Ligation of the Veins In, Following Appendicitis	309
Pyloric Stenosis in Infancy.....	312
Pyloric Stenosis, Congenital Hypertrophic	426
Pyloric Stenosis, Infantile Hypertrophic	252
R	
RATHBUN, NATHANIEL P.—REMARKS ON CYSTITIS.....	136
RAYNOR, F. C.—REMARKS ON THE LINGUAL TONSIL	125
RECTAL DISEASES, RELATION TO THE GENERAL NERVOUS SYSTEM.—LAPLACE	411
Rectal Prolapse	32
— — in Children	316
Rectal Shelf	282

	PAGE
Rectum, Prolapse of.....	380
— (See Carcinoma.)	
REHLING, MARTIN, and WEIL, RICHARD—THE AVOIDANCE OF HEMOLYSIS IN TRANSFUSION	96
Renal Decapsulation in Puerperal Eclampsia	245
Renal Pelvis, Suppuration.....	282
— (See also Kidney.)	
Reynaud's Disease	282
Ribs, Displacement of.....	32
ROBINSON, BYRON — THE UTILITY OF THE VAGINAL DOUCHE	262
RÖNTGEN TREATMENT OF MALIGNANT DISEASE.—LEONARD.	413
RÖNTGEN RAYS, A BRIEF REVIEW OF THE APPLICATIONS OF, IN DIAGNOSIS—CALDWELL	297
— — Toxemia and Metastatic Sarcoma After X-Ray Treatment	249
Röntgen and Radium Rays, Desensibilization Against	316
Rubber Gloves, Disinfection of... ..	218
S	
SACRAL TUMOR, CONGENITAL, WITH REPORT OF A CASE—CAMPBELL, W. F.	207
Sacro-iliac Joint, Anatomy and Importance of	436
SAPHENOUS INSUFFICIENCY, REMARKS ON THE OPERATIVE TREATMENT OF—LEWIS	198
SARCOMA, EXCISION OF STERNUM FOR—ISAACS	291
— Value of Erysipelas and B. Prodigiosus toxins in....	315
Sarcoma of the Breast.....	242
— (See Röntgen Rays.)	
Sarcomata, Primary, of the Stomach	380
Scar Tissue	217
— — ITS PREVENTION AND OB-LITERATION—DUNCAN ...	165
Scarlet Red, on Granulating Surfaces	284
Schlatter's Disease	252
SCOLIOSIS, TREATMENT OF HABITUAL, BY PASSIVE AND ACTIVE CORRECTION—TOEPEL	178
Scopolomin-morphin, Action on Heart, Lung and Kidneys.....	282
SELBY, CLARENCE D.—ACUTE DILATATION OF THE STOMACH... ..	1
SELLENINGS, ALBERT E.—A MODIFIED OPERATION FOR INGUINAL HERNIA	110
SHIELDS, GEORGE F.—EXCISION OF THE ELBOW JOINT: REPORT OF TWO CASES.....	54
— —, SURGICAL TREATMENT OF EPILEPSY, WITH REPORT OF A CASE	209
Shoulder, Dislocation of.....	250
Sigmoid, Hernias of.....	376
SIGMOIDITIS AND PERISIGMOIDITIS—TUTTLE	68
SILVER, HENRY MANN—THE SURGICAL IMPORTANCE OF THE VISCERAL CRISES IN THE ERYTHEMA GROUP OF SKIN DISEASES	157
SIMPSON, W. K.—A CASE OF LARYNGEAL STENOSIS IN THE ADULT, SUCCESSFULLY TREATED BY INTUBATION; CONTINUOUS WEARING OF TUBE FOR FOUR YEARS	140

	PAGE
Sinus, Frontal, Disease; Eye Dis- eases Secondary to, and Orbital Complications of	379
SINUSES, ACCESSORY; THE ORBITAL ROUTE TO THE—FRIDENBERG....	227
— Nasal; Ocular Symptoms of Disease	379
Skin Disinfection with Iodine....	348
<i>Skin-grafting, Additions to the Technic of</i>	182
SKIN GRAFTS, A PARAFFINED MESH FOR RETAINING—PERRY.....	243
SPENCE, THOMAS BRAY— DILATATION OF THE FEMALE URETHRA	338
Spine, "Railway"	147
— Tumors of	341
Spirocheta Lymphatica	283
— Pallida	284
Spleen, Floating, with Twisted Pedicel	188
Splenectomy, Blood Study After..	313
STERN, C. S.—THERAPY OF THE PROSTATE	134
STERNUM, EXCISION OF. (See ISAACS.)	
STEWART, C. A.—SURGICAL TREATMENT OF RETRODISPLACE- MENTS OF THE UTERUS.....	264
STOMACH, ACUTE DILATATION OF THE—SELBY	I
— Post-operative Dilatation of	186, 323
Stomach Surgery	57
<i>Surgery, Pediatric</i>	276
Surgery and Medicine. (See AL- LISON.)	
SURGICAL SUGGESTIONS 27, 60, 150, 183, 213, 246, 275, 307, 341, 371, 432	
Synovitis, Chronic	131
— Papillary	91
Syphilis of the Stomach.....	248

T

TALIPES EQUINUS VARUS, TREAT- MENT OF, BY PLASTER OF PARIS— BARNETT	199
<i>Talma, The, Operation for Cir- rhosis of the Liver</i>	212
TESTICLE, UNDESCENDED, INFLAMED, CAUSING OR SIMULATING AP- PENDICITIS; APPENDICITIS A CAUSE OF UNDESCENDED TES- TICLE. CASE REPORTS—CANT- WELL	322
Tetanus, Magnesium - sulphate Treatment of	39
THOMAS, WILLIAM S.—FRAC- TURES OF THE RADIAL SHAFT. ROTATION DEFORMITY (OCCUR- RENCE AND DIAGNOSIS) AND ALUMINUM PLATES	266
THROMBOSIS, SINUS: TWO TYP- ICAL CASES OF—KOPETZKY.....	48
— — of Otic Origin.....	250
— Cavernous Sinus	219

	PAGE
THROMBOSIS OF THE POPLITEAL AND ANTERIOR AND POSTERIOR TIBIAL ARTERIES, COMPLICATING AN AP- PENDICEAL ABSCESS—CAMPBELL, J. L.	143
Thrombo-angiitis Obliterans, Veins in	218
Thyroid Transplantation	283
TOENAIL, INGROWING; A MODI- FIED OPERATION FOR—LESSER....	43
— — OPERATION FOR—JEN- NINGS	163
— —	156
TOEPEL, THEODORE—TREAT- MENT OF HABITUAL SCOLIOSIS BY PASSIVE AND ACTIVE CORREC- TION	178
TONSIL, SPOON ENUCLEATION OF THE—MACWHINNIE	363
TONSIL, THE LINGUAL—RAYNOR..	125
Tonsils, Malignant Tumors of...	220
Tracheotomy	220
— FOR FOREIGN BODIES IN THE AIR PASSAGES, BASED UPON FIFTY-THREE SUCCESSFUL CASES —WESTMORELAND	364
Trachoma, The Cause of.....	250
Transplantation of Bloodvessels, Organs and Limbs.....	61
*Tuberculosis, Mercurial Treatment of	252
— Breast	292
— Joint	370
— Pulmonary, Operative Treat- ment	312
— URO-GENITAL; A PLEA FOR EARLY DIAGNOSIS AND CONSER- VATIVE TREATMENT—MUREN.....	335
TUBERCULOSIS JOINTS, THE CON- SERVATIVE TREATMENT OF—PIN- GREE	194
Tuberculosis and Menstruation...	31
Tuberculous Sinuses, Bismuth Paste in	435
TURBINATE, CONSERVATION OF THE MIDDLE.—HITSCHLER	416
TUTTLE, JAMES P.—SIGMOI- DITIS AND PERISIGMOIDITIS....	68
Typhoid Perforation	42

U

Ureteral Fistulae	248
— Isthmuses	152
Urethra, Female; Dilatation of— Spence	338
— TUMORS OF, IN WOMEN, WITH SPECIAL REFER- ENCE TO MALIGNANT GROWTHS.—HIRST	388
URETHROTOMY, THE POST-OPERA- TIVE TREATMENT OF, INTERNAL AND EXTERNAL—CHRISTIAN....	425
Urine, Luy's Separator.....	314
— Retention of, Post-Operative	210
Uterine Bleeding, The Diagnostic Indications of—Graber.....	10

	PAGE
— Hemorrhage, Momburg's Method of Ischemia in... 153	153
— — Serum Treatment of.... 153	153
Uterus, Carcinoma of. (See Car- cinoma, WATKINS.)	
— DISPLACEMENTS OF; OPERA- TIONS FOR. (See BRICK- NER, S. M.; GRABER, STEWART, YOUNG.)	
— RETRODISPLACEMENT OF; THE DIAGNOSIS AND TREAT- MENT.—MONTGOMERY ...	381
— Perforating Wounds of....	30
— PROLAPSE OF. (See GRA- BER.	
UTERUS, SACRAL SUSPENSION OF THE.—YOUNG	73
— SURGICAL TREATMENTS OF RETRODISPLACEMENTS — STEWART	264

V

Vaccination Infections	387
VAGINAL DOUCHE, THE UTILITY OF—ROBINSON	262
Varix, Renal	282
Vertebrae, Cervical; Dislocations of—Warbasse	105
<i>Viscera, Bacteria in Normal</i>	309
VISCERAL CRISES IN THE ERYTHE- MA GROUP OF SKIN DISEASES, THE SURGICAL IMPORTANCE OF— SILVER	157
<i>Volvulus</i>	244

W

WARBASSE, JAMES P.—DISLO- CATIONS OF CERVICAL VERTE- BRAE	105
<i>Warbasse, James P. Editorial An- nouncement</i>	58
Wasserman Reaction, Effect of Specific Therapy on.....	316
WATKINS, ISAAC L.—EARLY DIAGNOSIS OF CARCINOMA OF THE UTERUS	128
WEIL, RICHARD. (See REHL- ING, MARTIN, and WEIL, RICHARD.	
WESTBROOK, RICHARD WARD—THE CANCER PROBLEM FROM A SURGICAL VIEWPOINT, WITH A POSSIBLE EXPLANATION OF THE REMARKABLE FREEDOM OF THE DUODENUM FROM CAN- CER INVASION	286
WESTMORELAND, W. F.— TRACHEOTOMY FOR FOREIGN BODIES IN THE AIR-PASSAGES; BASED UPON FIFTY-THREE suc- CESSFUL CASES	364

Y

YOUNG, JOHN VANDOREN— SACRAL SUSPENSION OF THE UTERUS—A NEW TECHNIC.....	73
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ACUTE DILATATION OF THE STOMACH.*

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SYNONYMS.—Acute gastro-duodenal dilatation; acute gastric insufficiency; acute gastric paresis; gastro-mesenteric ileus, and arterio-mesenteric obstruction of the duodenum.

PREFACE.—Briefly, the status of our knowledge concerning this lesion is as follows: That the stomach does occasionally become enormously enlarged in the course of a very short time is an accepted fact. That the duodenum to the root of the mesentery sometimes is associated with the stomach in this enlargement, we cannot say always, is likewise an accepted fact. Our conception, however, of the etiology and the manner in which it acts to produce the condition is very vague, although the symptoms, diagnosis and treatment are comparatively well understood—at least, sufficiently well understood to enable us to recognize the presence of the lesion and institute rational treatment.

We know, reasoning from circumstantial relations, that injuries, operations, anesthetics, wasting diseases, acute infections, and excessive over-loadings of the stomach are important factors in the production of the dilatation; but the process from the beginning of the causal action to the completion of the morbidity is enshrouded in a veil of hypotheses and theories. Our problems, therefore, in the study of the disease are etiological and pathological, and for their solution we must look to the data of cases observed, confirming when necessary by experimentation.

Inasmuch as the condition is rare—our literature would lead us to this conclusion—and its origin obscure and varied, definite determinations are not logical in single cases or in small series; thus the report of one case is without merit except that it contributes to the mass of cases reported, from which only are conclusions justifiable. Viewed in this light, it becomes the duty of all observers to

record their cases. It is, therefore, purposed to present the history of a patient who developed an acute dilatation of the stomach shortly after receiving a back injury. It is also purposed to suggest certain conclusions relative to the etiology and pathology of this case.

REPORT OF CASE.—(Case 1,009—Accident Records.)—J. N., French; age 51; married; no children; ship carpenter.

History of Accident.—January 9, 1906, J. N. slipped from a ladder and fell into the hold of a boat, striking his back against a channel iron. He was promptly removed to St. Vincent's Hospital.

Examination.—The patient was perfectly conscious and rational. His one complaint was of severe pain in the dorsal region of the back and in the right side of the chest. There was no evidence of paralysis, either motor or sensory—the reflexes were normal and the sphincters under control; or in other words, there was no evidence of a cord lesion.

In the dorsal region, however, was a large hematoma, extending from the spine of the eighth cervical vertebra to that of the seventh dorsal and from scapula to scapula. The great swelling and the extreme tenderness accompanying it prevented examination of the underlying spinous processes, which made it impossible to ascertain whether or not there was any deviation in their alignment; but apparently there was not as the man could bend his back: front side to side and forward and backward with comparative ease, though not without pain.

At the junction of the fifth rib and the anterior axillary line on the right side was a small area of extreme tenderness and sharp pain. This apparent costal manifestation was affected by neither respiration, nor compression of the chest.

None of the thoracic organs showed evidence of injury or disease; and the physical examination elsewhere demonstrated nothing abnormal.

Subsequent History.—His recovery, as concerned the injury, was satisfactory, though slow. In due time the swelling receded and the tenderness lessened; this made possible a satisfactory examination

* Read in part before the Northwestern Ohio District Medical Association, December 10, 1907, at Toledo, Ohio.

of the spine, but no fracture was demonstrated; nor was one demonstrated in the rib. He returned to his usual occupation at the end of three months, but his abilities have been limited by pain persisting with variable severity in the back and also the right side of the chest.

These few remarks, however, are incomplete, as there developed a complication that is quite worthy of note and will be presented in detail.

Complication.—The first day after the injury, the patient's general condition was very good, the temperature being normal, pulse 76 and respiration 19; but the abdomen had become tympanitic and the bowels constipated. This abdominal condition the patient did not regard as abnormal; in fact, he claimed to have had trouble of this character for a long time. Nevertheless, he was given divided doses of calomel that evening, and the following morning, much against his wishes, an ounce of Rochelle salts.

The second day the bowels failed to move, and the abdominal condition gradually became accentuated. An enema was given, but failed to produce a satisfactory result, peristalsis seemed to be wholly abolished. With the approach of night the pulse rate quickened and, with the flushed face, the pink lips and the parched throat, suggested a rise of temperature which the thermometer failed to register. Throughout the day the man had been nauseated, but had not vomited.

He passed a bad night, and the following day (the third after the accident) found him rapidly growing worse, with a normal temperature. Not so anomalous and more in keeping with his general condition were the small volume pulse of 140 and the anxious facial expression. He was intensely thirsty and constantly drinking, though he would accept no nourishment; but each draught seemed to turn to gall in his stomach and was ejected, green and bitter. The vomitus was not stercoraceous—its odor was suggestive of acetone—nor was the vomiting projectile in type; the material seemed to well up into the mouth as if overflowing from the stomach. Completing the picture was the increasing area of stomach dulness forcing itself into prominence in the upper portion of the abdomen and encroaching upon the chest boundaries, making him very short of breath. Subjectively, the patient was most uncomfortable, although suffering no actual pain, very nervous and in fear of impending death.

Treatment of the Complication.—Obviously gastric lavage was indicated. The introduction of the stomach tube resulted in the evacuation of an enormous quantity of fluid similar in character to that previously being vomited and was followed by im-

mediate relief. In fact, the relief was so great, and so rapidly did the patient improve, that he was shortly granted permission to satisfy the thirst which had continued with intensity. This indiscretion was followed by a return of the symptoms, but they were again relieved by evacuation and thorough washing of the stomach. Absolutely nothing was then permitted by mouth; the necessary alimentation was by rectum and consisted in sufficient quantity of fluids to reduce the thirst, as well as a reasonable proportion of nourishment. By the end of twenty-four hours the stomach seemed so to have recovered its tone as to permit a cautious return to normal diet, which was accomplished without further untoward developments.

ANALYSIS OF THE CASE WITH RESPECT TO ITS ETIOLOGY.—*The Injury.*—A clear understanding of the character of the injury is desirable in order that its causal relation to the stomach lesion, if there be any, may be learned.

That there was no lesion of the cord was made certain by the absence of paralyses, both motor and sensory, the maintenance of sphincteric control and the continuance of normal reflexes; these would also seem to indicate the absence of a vertebral fracture or fracture-dislocation, though that does not necessarily follow, as the arrangement of the cord within the vertebral canal is such that it may escape injury in the presence of considerable vertebral damage. In fact, the tenderness and pain in the region of the fourth and fifth dorsal vertebræ, present immediately after the accident and persisting for three months and more, would lend color to the assumption of a laminar fracture. The same may be said with respect to the painful point on the right side of the chest, which, in the absence of a fracture of the rib, may be accepted as evidence of the irritation of a sensory nerve at its point of exit from the spinal canal; such tender points, being the peripheral manifestation of the central irritation, are frequently present in pathological conditions in relation to the sensory roots—as, for example, the neural pains of tabes, vertebral tumors, spinal tuberculosis and possibly herpes abdominalis.

It is a matter of comparatively small importance, however,—this question as to the existence of a fracture—as it certainly could not have been a bad one did it exist. It is sufficient to know that there was a severe contusion of the back; and there was evidence enough of this in the extreme pain and tenderness and the large hematoma so rapidly appearing. It is easy to conceive that so severe an injury in this region could well have produced effects elsewhere in the economy.

The Dilatation of the Stomach.—Fortunately for the patient this complication did not prove fatal, but his recovery minimized the data. Nevertheless, the symptoms, the physical signs and the stomach-tube findings warranted the diagnosis; the treatment justified it. The diagnosis being established, what conclusions may we draw relative to the cause of the condition?

In the first place, we have the man's confession of prior stomach trouble, which, on further questioning, was found to consist in feelings of fullness with eructations and at times palpitation of the heart—reasonable evidence of what we are prone to term "indigestion." Thus, inasmuch as the stomach was previously in a pathological state, physiologically or anatomically as the case might have been, it was assuredly in a condition of diminished resistance, and therefore, may be considered to have acted as a predisposing cause of the dilatation. Supplementing this assumption is the well-known fact that chronic motor insufficiency frequently terminates in chronic dilatation; is it not, therefore, reasonable to assume that it might likewise cause an acute dilatation, or at least predispose toward it?

In the second place, the sequence of the dilated stomach to the injury of the back suggests that injury as the active cause of the dilatation, or, perhaps it may better be termed, the precipitating cause. To be sure, this is an assumption, but it is somewhat justified by the fact that back injuries, not necessarily cord injuries, are occasionally followed by abdominal distention and constipation, presumable evidence of intestinal paresis; it is further justified by the fact that acute dilatation of the stomach has occurred in individuals suffering with diseased or deformed spines, six cases of which have been reported (Conner, *American Journal of the Medical Society*, March, 1907).

In the third place—and this may seem far-fetched—did the salts have any effect upon the stomach that would assist in causing the dilatation? That they could affect the stomach to some extent is borne out by the patient's assertion that they never failed to nauseate him—in fact, always made him vomit; from this it may be assumed that they acted as an irritant to the stomach (to be discussed later). However, inasmuch as the stomach distress had never before been so severe as in the present instance, it would be unfair to conclude that the salts alone produced the dilatation; but it is reasonable to suppose that they acted as an accessory etiological factor.

Summary of Etiological Argument.—In summarizing, it seems probable that the injury, assisted per-

haps by the immediate effect of the salts upon the stomach, possessed an active causal relation, which, in conjunction with the predisposing condition of the stomach, acted to produce the dilatation. There were, therefore, three causes more or less essential, the united action of which accomplished the dilatation. They may be classified as predisposing, active and accessory; being respectively the condition of the stomach, the injury and the effect of the salts upon the stomach.

THEORY OF MECHANISM OF DILATATION.—Under favorable circumstances in cases that have been studied from their inceptions to the post-mortem room, while the morbid anatomy may be an open page, the process of the dilatation from cause to effect is at best an open question; in the present case it is necessarily very obscure, and we are compelled to deduce our conclusions from analogies rather than pathological observations. To be sure, we have as a basis for this study the dilatation and its reaction to treatment, on the one hand, and the three apparent etiological factors, on the other.

Predisposition of Stomach to Dilatation.—Generally speaking, any pathologic lesion of any organ tends to weaken that organ, lessening its resistance and, conversely, increasing its susceptibility to other lesions. Particularly is this true of the hollow viscera, all of which act more or less in the capacity of reservoirs and as such possess elastic walls, contracting or expanding as the occasions demand. Such organs are the gall and urinary bladders, the heart and the stomach.

By virtue of their function, the muscular elements of the walls of these organs are under constant control and are commanded to maintain by their tonicity and contraction the integrity of the organ; in other words, there are two opposing forces, on the one hand, the force of the accumulating contents tending to enlarge the organ and, on the other, the muscles of the walls opposing this action and when necessary even expelling the contents.

There is thus a constantly acting balance of power. Should anything arise to disturb this balance of power, the one opposing factor would overcome the other. For example, any disease or lesion affecting the muscle walls would weaken them and render them less able to maintain their opposition to the force within, particularly in event of its reaching undue proportion. The result, of course, would be a dilatation of the organ, more or less sudden, depending upon the intensity of the intra-visceral pressure. A pretty well recognized and understood

instance of this circumstance is the acute dilatation of the diseased heart from overstrain; in which the disease may be regarded as the predisposing cause and the overstrain as the active.

Reasoning from analogy, it may be assumed that a similar effect may obtain in a diseased stomach which has been overloaded or contains food abnormally fermentative. There are, however, comparatively few reported cases of acute dilatation of the stomach that can be said to have originated in this manner; but this does not affect the importance of the disease-induced weakness of the motor elements as a probable predisposing cause of acute dilatation.

For instance, it is possible, in a stomach weakened by disease or overwork, for a temporary cessation of motility (inhibition or peristalsis) to allow an accumulation of contents, not necessarily ingested food, which the weakened muscles upon resuming their motility cannot express or even oppose, resulting in a dilatation that is directly proportional to the accumulation of the contents. Were the stomach walls possessed of normal reserve strength, it is fair to assume that they would, upon the resumption of motility, express or at least diminish the volume of the contents.

While entirely theoretical, this conclusion is supported by clinical observations of Traube, Boas-Albrecht, Kelling, and Stieda; who respectively express the beliefs that acute dilatation of the stomach may arise from ulcer, acute dyspepsia, chronic dilatation, over distension, and atony.

The Back Injury the Active Cause of the Dilatation.—We have established by circumstantial evidence the seeming causal relation of the injury to the dilatation; but how did it do it? Without argument it must be conceded the relation was a nervous one, for obviously the injury had no anatomical association with the stomach.

The first thought, then, is of the cord; but there was no cord injury; and, granting there was, any etiological influence that it might be thought to have possessed would be discounted by the fact that in the great number of broken-back cases reported but two instances of acute gastric dilatation have been noted. It must, therefore, have been reflex, of which there are two possible pathways—the vagus and the splanchnic.

As is well known, these nerves control the motility of the stomach, the former increasing and the latter decreasing it. The vagus likewise acts upon the heart; with different effect, however, slowing instead of increasing its rate. Inasmuch as rapid heart action is a constant accompaniment of acute

gastric dilatation, to say nothing of the characteristic torpidity of the stomach itself, vagal stimulation reflexly instigated may be ruled out.

Vagal inhibition, or vagal paralysis, is less easily disposed of, for, as has been experimentally established, removal of the vagal influence results in increase of heart rate and abolition of gastric motility, both of which were features of the case under discussion. Experimental evidence favorable to such a conclusion was obtained by Kelling, who was able to inflate to bursting the stomach of dogs, the vagi of whom had been cut; in contrast, was the ability of normal dogs to offset the inflation by eructation or vomiting. Granting suspension of vagal function as a possible cause of gastric dilatation, it remains then to establish the back injury as the cause of the vagal depression. Such depression could be accomplished by either breaking the continuity of the two vagi or exhausting their centers. The nature of the injury, however, was not such as would directly involve the nerves, so if it had any influence at all it necessarily would have been through the medium of the centers. As a matter of fact, all injuries affect the vital centers; from the instant of their inception, by irritating the nerves involved, they serve to promulgate rapidly succeeding stimuli to these centers, the degree of the total stimulation being proportional to the extent of the injury. If the stimulation arising in this manner be sufficient to exhaust the centers, they are reduced to a condition of fatigue and cannot act. Though this be true of all centers, the vasomotor center is relatively the most susceptible and the first to become exhausted, resulting in what we term shock. Therefore, in this particular case, had the injury been severe enough to exhaust the vital centers, shock would have supervened prior to fatigue of the vagus centers; and, conversely, inasmuch as the injury was not sufficient to exhaust the vasomotor center, it was hardly severe enough to affect the vagus centers. It consequently cannot be regarded as having produced the dilatation through vagal depression.

Depression of splanchnic function may be ruled out in a similar manner; though a study of the physiology of the splanchnic nerves would be sufficient, for to remove their influence means to leave the vagus action unopposed, which tends to accomplish quite the opposite from dilatation.

There then remains but one more reflex action for consideration, which is splanchnic stimulation; and, all other reflexes being excluded, this might logically be regarded as having been responsible for the dilatation. There is, however, more substantial evidence. That the motility of the stomach may be

lessened or stopped by such a reflex stimulation has been proven by Wertheimer, who was able to stop gastric peristalsis experimentally by stimulating the central end of the sciatic nerve; he obtained the same effect by stimulating the central end of the vagus. Cannon likewise has been able to stop peristalsis absolutely by crushing the testicle. These are instances of reflex stimulation of the splanchnics, the physiological effect of which is inhibition of peristalsis. The injury of the back would necessarily have exerted its influence in the same manner, which could quite easily have been accomplished through the medium of the damaged posterior nerve root, previously described, to say nothing of the irritation originating in the injury itself. It is, therefore, reasonable to assume that the injury stopped gastric peristalsis by reflexly stimulating the splanchnics.

That there does exist a very close reflex relation between the viscera and their respective spinal segments, particularly insofar as concerns pain, was suggested at the early date of 1834 by William and Daniel Griffin, who stated, "We should like to learn why pressure on a particular vertebra increases, or excites, the disease about which we are consulted, why it at one time excites headache, or croup, or sickness of the stomach," and at recent dates by the accurate and well-known observations of Head and others. According to Head, the skin areas supplied by the dorsal segments from the sixth to the twelfth are those in relation to the stomach and intestines, which is not incompatible with the case under discussion. Bayliss and Staring have ascertained by animal investigations evidence of cord centers containing vasomotor, motor and inhibitory fibers, whereby it may be possible to affect the viscera by impulses arising in the skin.

So, as before stated, if the inhibition of peristalsis be of sufficient duration, it will allow considerable intragastric accumulation; and should this by chance happen to a stomach predisposed to dilatation, as described, an acute dilatation is within the realms of possibility.

The Salts the Accessory Cause.—When introduced into the alimentary tube, salts abstract the watery elements from the blood coursing through the walls; this is accomplished by the well-known physical phenomenon of osmosis. By so making the bowel contents more fluid the cathartic effect is brought about—but this needs no elucidation. Obviously, then, if the salts be introduced into a stomach that for the time being is unable to contract they will by virtue of this osmotic action abstract water from the blood within its walls and thereby

increase the volume of the contents of the organ. It is thus apparent that a goodly dose of salts is capable of materially enhancing the progress of acute dilatation.

It must not be assumed, however, that the presence of some hypertonic solution within a stomach is a requisite for dilatation. On the contrary, the contents of such a dilated stomach may be accounted for, in part at least, by the fact that there is more or less transudation from the walls of an inactive stomach, which is directly proportional to the loss of muscle tone; also, in part, by the fact that there is a back-flow from the duodenum, as shown by the presence of bile.

Summary of Mechanism of Dilatation.—The back injury reflexly inhibited gastric peristalsis. This allowed an accumulation—ingested and otherwise—which the stomach, upon the resumption of peristalsis, could not express. The salts, by their osmotic action, hastened the accumulation of the contents.

Notes on Pathology—The Obstructing Factor.—Before the dilatation becomes complete, there must necessarily be a paralysis of the gastric muscles, including both sphincters; this, of course, is temporary and exists largely as fatigue; were it otherwise, we should have no cures under continued lavage. What then prevents downward drainage into the intestine, or, stated another way, what causes the back-flow of bile and other duodenal juices? This brings up the question of gastromesenteric ileus, which consists in a dilatation of the duodenum to the root of the mesentery in addition to the dilatation of the stomach and the insufficiency of the pylorus, and according to Byron Robinson is the usual pathological picture. By some authorities, the mesentery and the superior mesenteric artery which it carries are thought to compress the duodenum and cause what has been called an arterio-mesenteric obstruction. Pressure of such a character would, of course, form an effectual barrier to the passage of the duodenal contents and in time, it is conceivable, cause such an accumulation of gastric contents that a dilatation might be caused. A normal stomach, however, would resent such a back-flow by early and persistent vomiting, which could not be relieved permanently by gastric lavage—as is true of enteric obstruction elsewhere—and the issue without operation would necessarily be fatal. Furthermore, such an obstruction would undoubtedly prove very painful and be accompanied by vigorous peristalsis, which was not so in this particular instance, and in fact rarely is. Though possible for this duodenal

obstruction to be primary, it seems more probable that it is secondary. Inasmuch as the duodenum is fixed where it passes behind the root of the mesentery, the falling of a dilated stomach—there is just one direction for it to expand and that downward—most certainly would tend to drag upon it and fold it so as to obstruct it; and furthermore, the heavier, or larger, the stomach become the more tightly would it drag upon this fixed point and tend the more surely to obstruct the duodenum. In fact, this form of obstruction would seem to be necessary to complete the pathological lesion, as otherwise would the excess of fluid drain off as fast as it would accumulate.

The Gastric Contents—If there be fermenting material in the stomach at the time of dilatation, a large volume of the intragastric space will be occupied with gas. In event of its removal, however, and a reaccumulation, the material will be in a great measure derived from the blood by transudation from the vessels of the stomach walls, as was stated. It must necessarily come in this manner, else what would be the source of such a vicarious supply of fluid? If the complication arises post-operative, the anesthetic, being excreted into the stomach, will augment the contents; first, by stimulating the secretion of mucus and, later, by irritation and consequent congestion. The process is a vicious one and tends to perpetuate itself, for the less the muscular tone of the stomach wall the greater will be the transudation of the fluids; and, vice versa, the greater the accumulation of the stomach contents the greater will be the loss of muscle tone.

As may be supposed, the blood suffers a considerable loss of its watery elements in this process of transudation, perhaps the most important effect of which is to make the patient very thirsty. Naturally he seeks to quench this thirst and drinks freely and frequently, adding with each draught to the contents of the stomach and thereby increasing the severity of the lesion.

Conclusions—I am quite aware that the inferences here recorded may seem to have been influenced largely by a personal equation; but, be this so, many cases of the acute gastric dilatation, when closely inquired into, will resolve themselves etiologically into factors similar to those noted. In other words, they will be found to originate in splanchnic stimulation, superimposed upon some chronic malady of the stomach and aided by the presence of some fermentative, irritant or hypertonic solution in the stomach.

I have had the privilege of observing six cases

of acute dilatation of the stomach, five of which recovered. All, but the one detailed, were gynecologic in character of the operation, and without exception they gave a history of previous stomach trouble; and in one a chronically dilated stomach was observed during the operation. This last was the first case seen, and it was the observation relative to the stomach that lead to the diagnosis of acute dilatation when the alarming symptoms arose and suggested the proper lines of treatment. For such reasons, I am inclined personally to lay stress upon the predisposition of the stomach.

So far as inhibition of the alimentary motility is concerned, every one knows how easy it is to accomplish. In fact, so common is it after operation, I care not what the operation may be, that it has grown to be an accepted fact, and we administer our cathartics to counteract its effects. I therefore do not hesitate to suggest that it is frequently of importance to the etiology of acute gastric dilatation—not alone sufficient, but working in conjunction with other important causes.

And lastly, I believe there must be, or usually is, something within the stomach that enhances the process through fermentation, irritation or osmosis.

GASTRIC ULCER.

There is one class of gastric ulcer which is not amenable to surgical treatment. These are the actively bleeding ones. It is my experience, and that of other surgeons, that these should be treated medically altogether, as surgical interference almost invariably leads to a fatal issue. I do not include here the slowly bleeding or oozing ulcers, or those in which hemorrhage has occurred at some time previously, but only those which are actively bleeding or have done so within a short time before the surgeon sees them.—JOHN B. DEEVER in the *Detroit Medical Journal*.

DIAGNOSIS IN ABDOMINAL DISEASES.

Abdominal diagnostic ability sufficient to guide the well-read medical practitioner to diagnose primary pathological conditions accurately may be acquired with a fair amount of observation at the operating table, and in no other way. It is hardly possible for a man to arrive at an appreciation of the real train of symptoms to be expected from a chronic gastric ulcer or from the stone forming a ball-valve in the chronic dilation of the common duct who has never seen either.—RICHARD W. WESTBROOK in the *Long Island Medical Journal*.

CATARRHAL DEAFNESS AND ITS TREATMENT.*

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The entire process of hearing may be divided into a physiological and a mechanical one. The former deals with the organs directly concerned in the perception and the interpretation of sound, the latter merely with the conduction of air vibrations to the perceptive portion.

We will pay our homage to the mechanical, or organs of conduction. For that purpose let us review briefly only those parts directly under discussion. The external auditory canal is a cartilagino-membranous tube, lined with the ordinary skin, with such modifications as are best suited for the performance of its function. At the end of this canal is the membrana tympani, closing up the entire canal. This membrane is placed obliquely to the longitudinal axis of the canal. On the inner surface of the membrana tympani and firmly attached to it is the large process or handle of the malleus and a small muscle, the tensor tympani. The effect of this muscle is to give the membrane a concave appearance with the convexity pointing inward. The purpose of this muscle is to vary the tension of the membrana tympani as occasion may demand. The short process of the malleus articulates with the incus, this bone in turn articulates with the stapes, thereby forming a chain of bones, the last of which is in direct contact with the perceptive apparatus. The space occupied by these bones is the tympanic cavity, which by means of the Eustachian tube communicates with the outer air in the naso-pharynx. The Eustachian tube, unlike the external auditory canal, is lined with mucous membrane, a continuation of the mucous membrane of the nose and pharynx.

The entire conducting apparatus consists, then, of the external auditory canal, whose function it is to receive and conduct air vibrations to the membrana tympani; the tensor tympani, which regulates the tension of the membrane to suit the various conditions; the chain of ossicles, which are a system of compound levers whose function it is to intensify the vibrations of the membrana tympani and have them recorded through the stapes to the sound perception apparatus; and the Eustachian tube, which serves the double function of equalizing the air pressure on the inner side of the membrane, as

well as furnishing a ready means of escape for the mucous and detritus of the middle ear.

Catarrhal Deafness.—The name implies the cause and the effect, or deafness due to a catarrh; a catarrh of what? *Not* of the *external* auditory canal, for we remember this canal is lined with practically true skin and closed by the membrana tympani. We find the cause of our deafness in the internal canal or Eustachian tube. Neither is this catarrh primarily of the Eustachian tube; on the contrary it is always due to extension of a catarrhal condition located elsewhere. By the open extremity of the Eustachian tube into the naso-pharynx the necessary means is furnished for an extension of a catarrhal condition from the nose. The nose and its pathological condition must be considered as the real starting point of the disease. For our purpose the nose may be viewed as an organ of elimination. True, the nose possesses many

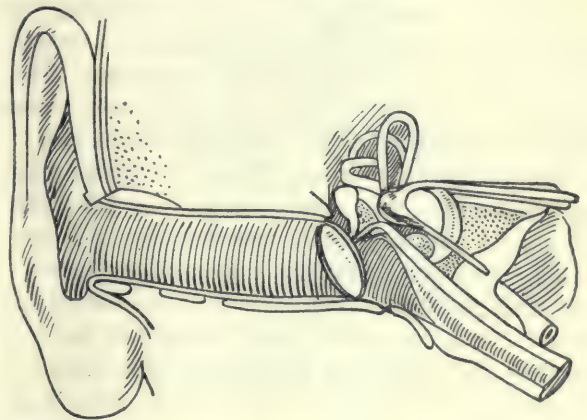


Fig. 1. Ear Drum in Normal Position.

other functions, but they do not concern us at this time. The nose is lined with mucous membrane, upon which particles of dust, dirt and bacteria continuously lodge. The normal secretions of the nose are alkaline in character and are usually capable of rendering innocuous any of the germs commonly encountered. This is accounted for by the fact that the nasal discharges possess both aseptic and antiseptic properties, but as might be suspected, these properties depend entirely upon the constitutional diathesis of the individual.

Before any germ can become a source of danger, something must have preceded the germ, be this a lowered body resistance from any cause or simply a lowered local resistance from incitants too great for the time being. From the very moment that the performance of the normal physiological function of the mucous membrane of the nose is interfered with, a disease process has its beginning.

* Read before the American Electro-Therapeutic Association, Sept. 22, 23 and 24, 1908.

The disease of the nose that interests us most is *Acute Rhinitis*.—We must consider the predisposing and exciting causes. Predisposing causes are lowered body resistance from any cause, feeble glandular activity especially, and toxic conditions of the blood either from internal or external origin.

Exciting causes are susceptibility, thermic influences, as a sudden change of temperature of the inhaled air, sudden changes of external body heat, as cold and chilling, the inhalation of irritants of all kinds which find lodgment upon the nasal mucous membrane. Acute rhinitis is a simple catarrhal inflammation of the mucous membrane of the nose and pharynx from which recovery sooner or later takes place.

Prolonged or repeated attacks soon lead to changes in the mucous membrane. The continued state of congestion leads to new tissue formation, increase of cell proliferation and greater glandular activity. By extension backwards there is created a post-nasal discharge, reflex cough, hawking and expectoration, all of which increase the susceptibility of an already over-irritated membrane. This process extends backwards, and in a very short time we have involvement of the Eustachian tube.

The mucous membrane lining the Eustachian tube undergoes the same changes as the nasopharyngeal membrane; it becomes swollen, congested, loses its power of contractility; there is increased glandular activity with occlusion of the lumen. As soon as this stage is reached the very function for which the Eustachian tube exists, is arrested. The air on the inside of the tube is absorbed, the mucous and other products of inflammation accumulate.

The air pressure, through the auditory canal being maintained at 15 pounds to the square inch, with nothing to equalize the pressure from the inside, there ensues bulging of the membrana tympani inwards. The tensor tympany muscle is relaxed and from nonuse becomes atrophied, the ossicles are firmly pressed together so that the stapes cannot move and thereby fail to convey air vibrations to the perceptive apparatus.

Through the extension of the inflammation adhesions are formed with bony ankylosis.

A case of *catarrhal deafness* is now fully developed; the patient presents himself and his history points to the diagnosis.

Some time ago, perhaps weeks, months or even years, he was subject to frequent *colds*; he had more or less sneezing, coughing with morning exacerbations of hawking and expectorations, especially far back in the nose and throat. Gradually he

noticed that he could not hear the ordinary conversation as well as usual, but instead he heard much better in noisy places. There is a ringing in one or both ears. This is especially marked upon lying down and seems to be keeping time with the heart beats. He cannot hear a watch tick unless pressed hard to his head. He has also noticed that when he forcibly clears his nose by blowing, he can feel or hear a click in one or both ears, and for the next few hours or days hears very much better.

The history of course is almost sufficient for a diagnosis, but we examine the patient, we find under proper illumination that the membrana tympani has lost its usual pearl gray luster, it appears cloudy with fibrous bands strongly marked traversing it, the margin is usually reddened and the concavity increased. A tuning of 256 or 512 vibrations to the

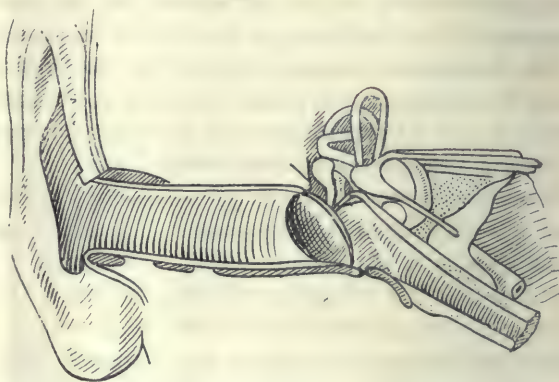


Fig. 2. Ear Drum Bulging Outward from Suction Stroke.

second is not heard when held a short way from the external meatus, but when placed in contact with part of the head bones the musical note is at once perceived.

This shows us then, without the detailed examination of aural specialists that the perceptive mechanism is intact, but the conducting mechanism, at least to air vibration, is faulty.

What changes or deviations have taken place from normal?

The Eustachian tube is closed, preventing the entrance of air and the hindering of drainage. The membrana tympani is forced inward by external air pressure held there and prevented from vibrating. The ossicles are crowded together with more or less inflammatory changes in their articulations, their free movement is hindered and no vibrations reach the perceptive apparatus.

Treatment.—Having made the diagnosis of an ordinary case of deafness due to catarrhal conditions, and having in mind the deviation from the normal, certain conditions present themselves that

require our attention. The disease began and still is in the nose, either a hypertrophic or an atrophic condition, or both, exist at the same time. General constitutional measures are always indicated and must never be omitted. For the local treatment we make use of some alkaline nose spray, because the normal secretions of the nose are alkaline in reaction, but in case of acute or chronic nasal catarrh it frequently happens that these discharges take on an acid character. The acidity may be due to some external influence, or it may be and more likely is, a provision of nature. We know that alkaline solutions soften, while acid solutions harden mucous membrane. We also remember that during the acute stage of an inflammation the mucous membrane is swollen and congested, an acid solution is therefore indicated to cause contraction. The acid should,

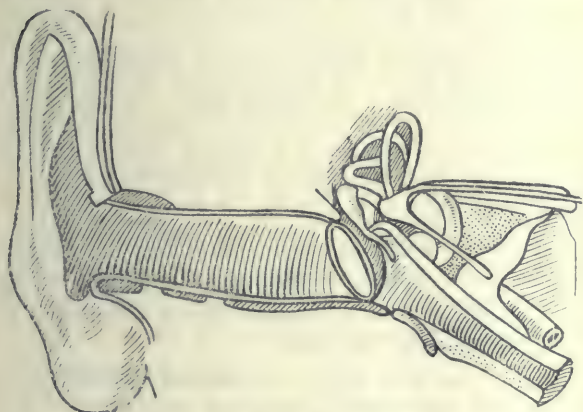


Fig. 3. Ear Drum Bulging Inward.

however, proceed from *within outward*, as it really does when nature works her own cure. If, therefore, we wish to assist nature, and that should really be our mission, it should be our duty to use an alkaline solution for a nose spray. In the first place, by applying to the outside of a mucous membrane an alkaline solution we stimulate the acid glands and so cause a stronger acid activity to take place within the mucous membrane, leading to greater evacuation and saturation of an acid media, with consequent contraction of the tissues in a normal or natural manner; secondly, we should use an alkaline nose spray because the alkaline spray will soften and better remove the tenacious acid mucus and the dried scabs. Assuming that the naso-pharynx has been properly cleansed, a mucous membrane either in a state of hypertrophy or atrophy requires a stimulating measure. Of all agents used, the high-frequency current from a glass vacuum electrode, delivered to the entire mucous membrane of the nose, is perhaps the best. This current should be used to the point of comfort for two or three minutes in each of the

nares. As an aseptic and antiseptic dressing we make use of a 10% solution of iodine and albolene. This mixture is sprayed into the nasal cavity with an albolene atomizer.

When the entire nasal cavity has been so prepared, an attempt should be made to force air into the Eustachian tube for two reasons; first, to equalize the air pressure upon the drum-membrane, and secondly, to facilitate the discharge of mucus and accumulations from the tympanic cavity; in other words, we restore the physiological function of the tube. It remains now to break up the fibrous ankylosis that exists between the membrane tympani and the articulations of the chain of ossicles. For this purpose we require a pump capable of

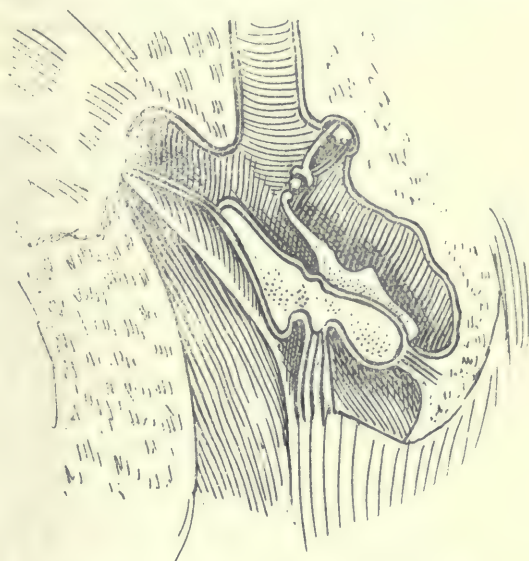


Fig. 4. Ossicles, Showing the System of Leverage.

alternating between a suction and compression stroke. This pump is attached to an Otis auroscope. The speculum of the auroscope should be protected by a small rubber tip to avoid undue pressure or injury to the auditory canal. This instrument is fitted with a small incandescent lamp and a magnifying lens so arranged, that when the apparatus is in action the movements of the entire membrana tympani may be under ocular supervision. The vibrations should be of moderate speed at first, but soon increased to tolerance for about two or three minutes in each ear. The treatment is then completed by adjusting the pump in such a manner that the suction stroke only is used. This causes more or less of a vacuum in the outer canal, the membrana tympani very promptly yields to the vacuum and bulges outward. A thorough stretching and loosening of the membrane with its chain of ossicles, especially the stapes from its contact

with the perceptive apparatus, takes place. A passive hyperemia is induced which is followed by absorption of the inflammatory products. In other words, a pathological condition has been changed with every assurance of restoration of physiological function; the cure of catarrhal deafness.

158 WEST 76TH STREET.

THE DIAGNOSTIC INDICATIONS OF UTERINE BLEEDING.*

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The subject assigned me by your worthy committee is not one that can be discussed with the same clearness as can appendicitis or gall-stone disease, or, for that matter, almost any other condition pertaining to women. Since the time of Adam and Eve and the birth of Abel, whenever that may have been, the medicine man has been struggling to unravel and understand the mysteries of uterine flow. The anatomist, the physiologist, internist, the surgeon, and even the poor gynecologist, all have labored to comprehend why woman was normally to lose a certain amount of blood more or less at regular periodic times. To-day we know as much about it as Adam did, and no more. However, the scientific man has settled for us pretty definitely what is to be considered normal and what abnormal. He tells us three to six days' duration, with an average loss of six or eight ounces, may be considered the normal, and anything much over either in duration or amount, as abnormal.

To consider the subject more seriously we are confronted with a few pointed questions and then it is for us to answer either in the positive or negative, if we can. First, why do women menstruate? We don't know. Theories we have plenty, definite tangible facts we have not. Second, is this function necessary to the propagation of the human welfare? We can answer it is not, because we see many women with a life long absence of the menses perfectly healthy, except possibly in so far as her mental equilibrium is disturbed by her sister's invariable insistence that she *cannot* live without menstruating. Otherwise she may be rosy

cheeked and well developed. We might go a step further and ask, are the pelvic contents essential to her economy; we answer rectum and bladder *yes*, tubes, ovaries and uterus, *no*. In other words she does not need the procreative portion of her pelvis to her own individual existence.

Again we may ask, is the function of menstruation necessary to the propagation of the human race; may the women bear children without it? We answer it is not absolutely necessary and she may bear children without menstruating, for we know such cases are on record and even cases who only menstruate while pregnant, and so when women consult us regarding the absence of the menses it is imprudent indeed to hang our heads in expressions of gloom and woe and tell her it is all up with her.

Now to come more definitely within the scope of this paper, the diagnostic part of uterine knowledge, we must leave the normal part of the woman's flow and begin to tread on the threshold of the pathological. At the outset we touch temporals and begin to query if we may learn anything relative to diagnosis from the character of the flow itself, and we find on a little investigation that we can learn a good deal and that by comparison and the exercise of three of our five senses, smell, feeling and seeing, we will be able to approximately determine the probable cause of the flow.

One of the first things to interest us will be the degree of the coagulability of the blood. The nearer it is to a true menstrual character, the less it will clot; at the same time we must consider the patient's general systemic condition, whether she is anemic, the subject of gall bladder or other biliary disease, in a word, we must eliminate every possible constitutional disease that might in any way be in causative relation to the flow. If found to be purely local we begin to determine its characteristics by odor, consistence and appearance. Next we must differentiate the local from general causes, that is, whether the bleeding in question is due to some condition confined to the pelvis or to something systemic. As a rule, when a physician is called to see a patient who reports that she is having a uterine flow he is altogether too apt to allow his attention to be focused on her pelvis and by that fail of correct diagnosis.

We are willing to admit that the constitutional causes of uterine hemorrhage by no means compare in frequency with the local, but they are none the less fully as important, and a paper of this kind will indeed be lacking in usefulness if it did not consider them at least concisely.

* Read before the Bronx Medical Society, September, 1908.

Probably the most frequent of these is malarial infection, and this we believe more prevalent in the younger women who are also more prone to hematuria. In the case of an unmarried woman the subject of such bleeding, it requires the most keen judgment on the part of the practitioner lest he mistake it for abortion or vaginal infection, as sometimes there is such lividity about the vulva and vaginal mucosa in malarial bleeding as would lead one to make a snap diagnosis of vaginitis; or in case of a congested uterus and appendages, of pregnancy. A careful search into the history of such cases will prevent mistakes and chagrin.

Next biliary affections will often attract our attention. Here very often if we are able to examine the fading stains on clothing we may detect shades of yellow, in other words, of bile even where jaundice is not particularly evident in the skin, just as we find it in the urine before the sclerotics show yellow.

An important point in these cases is the lack of coagulability of the blood, for these women do not show many clots.

When it comes to typhoidal bleeding mistakes are as frequent as its being mistaken for appendicitis, for we know that not few but many patients have their appendices removed who are really typhoid subjects, and I don't believe I am on the brink of falsehood when I say they are often curetted for similar reasons.

Then follow purpura scorbutum, hemophilia, chronic nephritis, anemia, chlorosis, heart disease. A word about hemophilia. It is supposed by many that this never plays any part in the uterine hemorrhage of woman and that nature has enabled her to overcome any tendency in this direction by the fact and function of menstruation. We are loath to accept this for we have had under our care three hemophilias, each of whom would bleed until practically exsanguinated before the flow would cease. Each one of these was a young woman, otherwise healthy, and certainly not subject to fibroids, sclerosis or aught else. Hence, we believe true hemophilia in the female at outset of menstruation to be a serious condition.

As to the character of the flow in cases where the source is constitutional we believe it to be for the most part, except in hemophilia and purpura, rather of a type and approaching the grumous.

As to the local causes; here we have a field for direct examination, and here it behooves us to pay closer attention to the type of the discharges, and at the outset we must know that it makes a marked

difference in which direction our patient is bleeding, whether externally or toward the peritoneal cavity, for quantity she will bear an external hemorrhage much better than she will the same amount into the abdominal cavity. Take for example a case of ruptured tube. Here anything approaching the amount we often see under the hips of a patient who has bled from the uterus through the vagina would assuredly kill her if it were intra-peritoneal. The reason is doubtless the irritation to the peritoneum, or as it is usually called, peritoneal shock. The same holds true of hemorrhage into the bladder or rectum.

Once in a while a practitioner will encounter a condition of peculiar odor, an odor if once learned will not be easily forgotten, of a consistency somewhat slimy, dark in color, not readily given to coagulation, probably not too profuse. With such data he will not be far wrong in making at least a tentative diagnosis of dead fetus in utero. The temptation here would be to at once empty the uterus. But right here lies some danger, especially if that fetus happens to have been dead for some time. Contrary to the cases of incomplete abortion, so long as the membranes are intact these women will do better if allowed to throw the uterine contents off en masse, which she will usually do promptly.

The bleeding due to ectopic gestation and pyosalpinx is quite similar and yet often distinct enough to be fairly evident. They are both mucous-like and dark, but in the ectopic there are apt to be shreds, while that of pyosalpinx contains more true blood.

The one instrument that finds its way to these cases very often, and not without detriment to the patient, nor worry to the doctor, is the curette. It stands to reason it has no place in either class and we must say here that enough can be inferred from the character of the discharge to at least arouse suspicion.

In fibroid tumors the hemorrhage is generally of a brighter red and may or may not be very profuse, and here again clotting does not take place with anything like the readiness it does in parturient cases, whether in abortion, placenta previa or post partal.

In the ambulatory cases coming to our offices, if the patient is a subject of fibroid her general mien and bearing is not that of a sick woman, and one peculiar thing is that she does not make very much fuss about her napkins, she makes no particular effort at concealing it; whereas she who is bleeding as a result of impending abortion or re-

tained secundines looks ill, stooped over, and one can notice a peculiar nervousness in the management of her napkins.

An intermittent discharge of blood, as of a patient saying she flows two or three hours and then stops, or that she flows at night, is very suggestive of a pregnancy with placenta previa complicating and generally requires interference sooner or later.

Hemorrhages attendant on the menopause are usually of a slightly thinner consistence and not such a deep red. These cases often require repeated curettage, say every three or four months for a year to keep them under control.

A bleeding that is easily started by the slightest manipulation of the cervix or uterus in women over thirty-five and sometimes younger should always be a strong incentive to search for malignant disease.

The condition known as fecal tumor is frequently a cause of uterine bleeding.

18 EAST SEVENTY-FIRST STREET.

PLACENTA PREVIA CENTRALIS.

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It is not the intention of the essayist to enter into a text-book discussion of placenta previa further than a short review of the history and etiology, as well as the older method of treating these cases, the search for a new method and a report of a method used by me during the past year which, I believe, will materially reduce the maternal mortality in these cases, not interfering with the ability of the mother to bear children in the future and a slight, if any, increase of fetal mortality.

Historical.—The history of placenta previa no doubt dates back to near the beginning of the world and was described by Gillehau and Mauricau in the beginning of the sixteenth century, but the first clear clinical and anatomical description was made by Portal in 1685. The first noteworthy American description of this condition was an article by Dr. Frank published in the transactions of the American Medical Association, 1885. From that time on, we find this condition occupying the minds of the leading obstetricians, many of whom have written valuable articles, all admitting that placenta previa centralis is the most dangerous of obstetrical emergencies, and varying in the treatment from absolute rest in bed, with bleeding from the arm for control of the hemorrhage, to immediate Cesarean section.

Etiology.—The selection of a site in the uterus for the attachment and growth of the ovum has been, and still is, nature's carefully hidden secret. Among the first to theorize on this condition was Hunter, who concluded that the ovum coming down through the tube pushed the decidua ahead of it, thereby being covered in and is arrested at or near the internal os. This theory was not generally accepted and gradually supplanted with the theory, which was undisputed up to a few years ago, that the ovum attached itself to the thickened endometrium; it was caught into a fold, the villi burrowed into the mucosa which so irritated the surrounding tissues that it hypertrophied wall-like around the tiny ovum, finally covering it entirely.

Recently, however, fortunate finds of early human embryos and experiments on animals by von Spee, Opitz and Peters, have proven a slightly different mode of implantation of the ovum, which, according to their findings, eats its way into the endometrium and sinks itself more or less deeply toward the musculature; the ovum at this period being very small (one and one-half to two mm.), in diameter. The opening in the epithelium soon closes by the hypertrophy of the surrounding tissue and any remaining opening is covered by a blood clot. The site of the insertion of the ovum becoming the site of the future insertion of the placenta and a slight development of the uterine wall no doubt takes place, permitting the flat growth of the placenta.

The future size of the placenta depends on the nutrition of the ovum and the general healthy condition of the decidua, and a previous endometritis is probably productive of many anomalies. This condition necessitated the wandering of the ovum from the opening of the tube toward the internal os until it found a suitable place for its attachment.

The way the placenta grows over the internal os is a matter of much speculation, all agreeing that it must first implant itself low in the uterus. All investigators agree that the placental villi can and do develop in the decidua reflexa and that this portion of the periphery of the ovum can later be applied to the decidua vera around the internal os, bridging over the latter.

Another theory is that the placental villi split, the decidua growing circularly around the os; after it is encircled by the villi it easily allows their growth over the narrow space. Very rarely the villi take a downward course by burrowing toward the external os, producing cases of cervical placenta, such as have been reported by Ahlfeld and Whiter.

Frequency.—Placenta previa marginalis is probably much more frequent than is generally supposed, while reports of placenta previa centralis vary from one in five hundred to one in a thousand, according to the reporter, and depending upon whether or not the observation was made in private practice or in maternity hospitals.

Pinaurd devised a system of measurements for the determination of the placental site. It consisted in determining the distance from the edges of the tear in the amniotic sack, from which the fetus had escaped, to the border of the placenta. To perform this he placed the placenta with its maternal surfaces down, then grasped the edges of the sack drawing them taut, after which the distance from the edge of the tear to the border of the placenta was measured. He estimated that the length of the lower uterine segment was between ten and eleven cm., and therefore a rupture in the sac where the distance from the edge of the tear to the margin of the placenta was less than ten cm. the placenta was partially attached in the lower uterine segment. By this method he estimated that in more than one-fourth of all cases at least part of the placenta was situated in the lower uterine segment. This method of estimation is no doubt susceptible to errors where the rupture of the membranes does not correspond to the most inferior part and in cases where the membranes are badly or irregularly lacerated.

While the method of Pinaurd to locate the placenta has, no doubt, resulted in larger percentages than is usually found in practice, still placenta previa as a complication of labor would be much more frequent than this if it did not so often interrupt pregnancy. Some authors estimate the frequency of abortion and miscarriage to be between forty and sixty per cent. On the other hand, the deduction made from a purely clinical point of view or where hemorrhage is present, no doubt underestimates the frequency of this condition as the marginal or lateral type frequently gives no clinical symptoms when the membranes rupture early, the head or presenting parts descend quickly and exert such pressure on the placenta site that bleeding does not occur.

Diagnosis.—From a clinical point of view it is well to consider, as placenta previa, all cases where the placenta is attached in that portion of the uterine segment which must be dilated to allow the advance of the presenting parts. The difficulty of early diagnosing the placental site is readily appreciated by those who have had a large experience in this line,

the only positive sign being the palpation of the placental tissues through the dilated os; but a careful examination of the pregnant woman in the sixth or seventh month, should exclude placenta previa centralis and in the majority of cases, a marginal implantation which is sufficiently near the internal os to cause serious hemorrhage, can be detected unless the hemorrhage occurs from a comparatively remote attachment where the descending head or presenting parts causes premature separation of the placenta. In this examination it is always well to remember Hegar's symptom of pregnancy which if applied both antero-posteriorly and to the lateral walls should give us a very thin lower uterine segment, an impossible condition if placenta previa exists. In the sixth month or after, a careful bimanual examination, either vaginal or per rectum, will usually reveal a peculiar spongy, fibrous, thickened gritty mass, situated just within the lower uterine segment and between the palpating finger and the presenting part of the fetus. In case it is total, but not central, the border may be felt anterior, posterior, or to the side of the cervix. The value of a rectal examination at this time must not be forgotten, as in the case of a small vaginal opening, it will be almost as valuable as the vaginal examination; it is less painful and free from danger of sepsis.

When we have a thin relaxed abdominal wall sometimes the margins of the placenta may be plainly felt if we have taken the precaution to secure an empty bladder before the examination is made. This was first pointed out to us by Spencer.

Feeling this mass per vagina or rectum we must differentiate between matted hair, thickened vernix caseosa, a monstrosity with exposed viscera and hemorrhage between the membranes. As a matter of fact, however, most cases are diagnosed when bleeding begins and this occurs after the sixth month in eighty-four per cent. of the cases. In fact, painless, causeless uterine hemorrhage at this time is almost pathognomonic of placenta previa. It has only to be differentiated from a ruptured varix of the vaginal wall and carcinoma of the cervix, both of which are readily differentiated by vaginal examination. Fortunately, for the prospective mother, it is rare that the first hemorrhage is of sufficient gravity to endanger the life of the patient, but a second hemorrhage surely follows with an increase in the amount of blood lost, and increased difficulty in controlling it, after which hemorrhages occur at regular intervals without cause and irrespective of the position of the woman. All attempts to control

the hemorrhage by absolute rest and quiet are sure to fail and the patient may suddenly awake from a sound, quiet sleep and find herself in a pool of blood or may notice blood with every urination or defecation.

Lateral implantation of the placenta, seldom causes ante-partum hemorrhage, unless the placenta is situated sufficiently near the internal os, to be within the area of dilatation necessary for the descent and engagement of the presenting fetal parts. If it is within this area and the membranes are tough and inelastic they may, by dragging down, produce a more or less complete separation of the placenta with consequent bleeding. Fortunately, however, rupture of the membranes usually occurs and the pressure of the presenting part controls the hemorrhage more or less effectually.

It has been suggested, and I believe, that the majority of cases of premature separation of the placenta are of the lateral type with tough inelastic membranes, which do not rupture early and by its dragging effect a premature separation is produced.

If placenta previa be suspected, all examinations should be made with care and not before preparation for the control of the hemorrhage is made.

Older Methods.—It is interesting to note that the pendulum, in the treatment of this condition, has swung from the ultra conservative to the extreme radical or from the period of waiting for spontaneous termination of pregnancy with the survival of the elect, to the present day when the advocates of Cesarean section advise this method as soon as placenta previa is diagnosed.

Unfortunately, the statistics of the ultra conservative are not available, but the universal recognition of the gravity of this condition, even at that time, leads us to believe that the elect were few in number and those probably belonging to the marginal type of placenta previa. That the treatment of this condition is still a matter open for discussion and a matter upon which the most prominent men in our profession differ widely is shown by the following abstracts:

Hudson Ford, St. Louis; A. Palmer Dudley, N. Y.; and G. M. Boyd, Philadelphia, said in effect: "Cesarean section and the Porro operation are not only justifiable, but in reality indicated in complete and central ectopic implantation of the placenta."

A. G. Zinke, Cincinnati, O.—"That there are cases of partial placenta that may be successfully treated in the old way I do not doubt. Perhaps a small majority of all the placenta previa cases can be treated successfully, as to the mother at least, in the manner of Fry and De Lee, but what of the

large majority of mothers that succumb and the great majority of children that are sacrificed at once?"

C. A. L. Reed in his text-book of gynecology said: "Cesarean section might be advisable in some cases of eclampsia, but a skilled obstetrician would never think of such a procedure in cases of placenta previa. In fact, the operators who advocate this step in obstetrics are surgeons who have had little or no experience in obstetrical practice."

It is to be regretted that search for improvement in methods of delivery per vagina have practically been given up, or at least discouraged, by the following editorial from *Obstetrics*:

"No new method of treatment per vagina will be evolved that will materially improve the best method now pursued by thorough obstetricians."

In pre-antiseptic days the conservative, or the physician who artificially dilated the os, separated the placenta and delivered the fetus, produced a maternal mortality of about thirty per cent. in cases reported as placenta previa centralis. In the marginal varieties a mortality of sixteen per cent. was secured.

In the antiseptic period this mortality was not materially decreased, as in the total of 4,731 cases collected we still find a maternal mortality of twenty-four and four-tenths per cent. for the central variety, and eight and three-tenths per cent. for the lateral or partial variety.

When the high percentage of mortality is considered, it is no wonder that gynecologists, who were securing a mortality of one to one-third of one per cent. in operations for the removal of the uterus, should attack this condition through the abdominal route, especially when it is considered that not a few of them were unfamiliar with the obstetrical canal and chose the route with which they were familiar in preference to an operation which necessitated rapid dilatation of the cervix, version and extraction.

As the tables available did not accurately differentiate between placenta previa centralis and the marginal or lateral varieties, and it is fair to presume that the percentages of one to the other was the same in those days as at present, we will largely arrive at our deductions from the averages of the totals. This method seems particularly fair in arriving at the mortality secured by Cesarean section, as in the statistics where the varieties were differentiated I found that placenta previa centralis had existed in only forty-five per cent. of the cases treated by Cesarean section, and it is not probable that this differs materially from the percentage of

the different varieties treated by the other or more conservative method. In arriving at my deductions in this manner, I find a mortality of nearly twenty-five per cent. or about on a level with the mortality secured by rapid dilatation, version, and extraction in the antiseptic period.

In our analysis of the cause of death, hemorrhage stands out so conspicuous that a material reduction of the mortality is not to be considered without first devising a more absolute means for its control. The origin of the blood prior to delivery is from four principal sources:

First: The veins of the placental site.

Second: The inter-villous spaces of the placenta.

Third: The circular sinus of the placenta.

Fourth: Rarely from interference with the fetal bloodvessels.

Tamponing the cervix at this time is a method which has been in vogue for a number of years, and no doubt was an improvement when it was introduced, but a tampon sufficiently firm to control the hemorrhage will within a short time produce enough dilatation of the cervix to increase placental separation and after this dilatation occurs with this increased placental separation, we find our cervical tampon loose and expelled by the force of the blood behind, which, if the cervical tampon has been supplemented by a firm vaginal tampon permits of a hemorrhage into the large vaginal cavity until it entirely fills the bony pelvis below the superior strait. For this method to materially reduce the amount of hemorrhage it certainly must be repeated frequently, under the constant care of the attending physician, and even then the amount of blood lost before we have sufficient absorption and dilatation to permit of delivery, would no doubt, in the majority of cases, border on the line of tolerance.

Rapid dilatation bimanually performed, allows of no control of hemorrhage until such time as dilatation is sufficient to insert the hand, produce version, and bring down a leg of the infant in the cervical canal, which by direct pressure, does control to a greater or less extent the hemorrhage during the process of dilatation until it is complete. In cases where direct pressure by the protruding part of the infant fails to control the hemorrhage, it has been recommended that we grasp the cervix with the hand and make pressure. Unfortunately the descending part of the fetus in a very large percentage of cases also produce greater separation of the placenta which is usually delivered before or with the buttocks of the infant, and before nature can control the hemorrhage from the placental site by

the usual process of contraction and retraction.

At this time the appropriate warning "Save blood," calls for immediate action and we are compelled to rapidly extract the child to permit uterine contraction and retraction, with the result that in a certain number of cases we produce severe tears, as it must be remembered, under these conditions, the cervix is more readily torn than a normal cervix; and on account of its increased thickness and vascularity bleeds many fold more freely than under normal conditions. These tears unfortunately do not always end at the internal os, but in a large percentage of cases extend well up into the body of the uterus.

Under all circumstances there is normally a paralysis of the uterus at the placental site, which is not a matter of moment when the placenta is normally situated; but when it is attached to the lower segment of the uterus this paralysis is often a matter of grave concern for at best the uterine wall below Blandi's contraction ring has but a minimum power of contraction and retraction. This area of uterine paralysis and the limited power of contraction and retraction frequently gives rise to trouble in the third stage of labor by its inability to free itself of the normal placental attachment, causing retained placenta; and actual pathological adhesions of the placenta do occur in one-third of all cases.

Either of these conditions necessitates intrauterine manipulations during the third stage of labor with its consequent dangers of septic infection and while our belief in the absence of active pathogenic germs in a normal vagina at term seems to be founded on fact, still under circumstances not always under control, or in conditions not fully recognized, a bacterial flora of marked virulence may develop.

It has been suggested that the presence of active bleeding will render the vaginal secretions alkaline and thus offer a habitat for the development of micro-organisms usually present or introduced by unclean hands and dirty instruments.

A puerperal infection whose atrium is the placental site is particularly dangerous to the parturient woman on account of its intimate relation to the veins and lymphatics and the almost direct communication of the vessels in the lower uterine segment and cervix with their allied structures in the parametrium, makes dissemination frequent, and goes a long way toward explaining the great frequency and virulence of post-partum infection in placenta previa.

About one and one-half or two years ago, in dis-

cussing this operation with me, a friend and fellow practitioner suggested the possibility of assisting in the control of the hemorrhage by ligature of the uterine artery through the vagina. In February of 1907, our first case presented itself.

After careful preparation, tenaculum forceps were applied to the anterior and posterior lip of the cervix; the cervix was pulled down into the vagina as far as possible; a retractor, held by my assistant, was applied to the vaginal wall on the left side of the patient; the uterine artery palpated with the index finger of the left hand and a catgut ligature was thrown around the artery prior to its division into the anterior and posterior cervical artery. This procedure was repeated on the right side of the cervix, with the exception that the uterine artery was palpated with the index finger of the right hand and the ligature thrown around with the left hand; the needle being introduced below the artery and brought out above in order to avoid the possibility of including the ureter. After this, rapid dilatation was resorted to by the use of a Bossi dilator. In about twenty minutes the cervical canal was dilated to six cm. A finger was then inserted along the left wall of the lower uterine segment until a leg was grasped, which was brought down and the child delivered.

My experience with placenta previa had so impressed me with the danger of severe hemorrhage from further separation of the placenta that I extracted the fetus rapidly, thereby greatly increasing a cervical tear which had been started by the Bossi dilator. The tear was very deep, extending well up into the body of the uterus and was with difficulty repaired; after which the control ligature around the uterine arteries was removed, and I believe the patient lost but little, if any more, blood than during a normal labor.

The fetus was resuscitated with some difficulty and lived for several hours; dying, I believe, of prematurity.

Unfortunately, however, our technic was lacking in some particular and the cervix became infected, which was followed by phlebitis of one limb, but with this exception the patient made an uneventful recovery.

Since this I have delivered ten cases of placenta previa centralis by this method. Two had severe hemorrhages and suffered from such a profound degree of anemia when I first saw them that death was only a matter of a few hours, though I believe, and eye witnesses agree, that both lost considerably less blood than a normal labor, but both died within a few hours.

The sixth case was interesting, and the first in which I was absolutely confident that the method would control the hemorrhage. Prior to bringing the patient in the delivery room every precaution was made for combating any hemorrhage with which we might have to deal. The intravenous injections of saline solutions and the use of stimu-

lants were intrusted to an assistant and he was instructed to use them if necessary. The anesthetist was instructed to give the patient as little anesthetic as possible to keep her partially unconscious but not sufficient to interfere with uterine contractions. The cleansing of the parts was commenced at the same time as the anesthetic. After shaving and thorough cleansing of the external genitals and the vagina, the cervix was grasped by the forceps, drawn well down to the vulvar orifice, held there by an assistant, while with my left hand the uterine artery was palpated as high as possible in the cervix and above the junction of the cervical and vaginal mucous membrane. After this, with my right hand, a full curved needle carrying a heavy catgut suture was inserted immediately below the lower border of the uterine artery, carried deeply into the cervical tissue and brought out above and tied. The cervix was then drawn to the left side of the patient and this procedure repeated to tie the right uterine artery. On account of the very close relation between the uterine artery and the ureter at this point it is necessary that this artery be definitely located and the needle inserted as near as possible below and carried from below upward, as by this method we reduce to a minimum the possible danger of injury to the ureter.

After this a Bossi dilator was inserted and firmly grasped by an assistant, while with one hand I manipulated the screw of the dilator, increasing the diameter as fast as the palpating fingers of my left hand showed the cervix to be relaxed and dilating under this pressure. This process of dilatation was continued until the total amount of dilatation slightly exceeded eight cm.

During this time the placenta stood prominently in view and we could plainly see the increased dilatation causing increased separation of the placenta without hemorrhage. In fact, the hemorrhage was so slight that with an occasional mopping off the placental site the view was always clear and distinct. The placenta was now delivered, internal version done and the child delivered as rapidly as I thought the exigencies of the case demanded to secure a living child.

After delivery an examination of the cervix showed a slight bilateral tear, neither side of which extended to the internal os, and a slight tear of the perineum. These injuries of the soft parts were immediately repaired and the patient went on to an uninterrupted recovery.

A few days after this another case presented itself and the same method was pursued until dilatation was complete, or nine cm. After this an examination showed the placenta almost completely separated, and although the placenta was delivered before the child, no hemorrhage of any consequence occurred. Feeling that the best interest of the mother, as well as the child would be promoted by the application of forceps, pressure was made from above, forcing the child down and the head engaged in the superior strait; forceps were applied and de-

livery completed with moderate rapidity and without injury to the soft parts of the mother.

In my previous operations I have been in the habit of removing the ligatures from the uterine arteries, although I feel that in quite a number of the cases the artery was more or less constricted by the suture used to repair the cervix and in one instance there was considerable oozing from the placental site around the cervix. In the last case, for the first time, I allowed the ligature to remain on the artery with the result that there was no secondary hemorrhage and some ten days after delivery I found the cervix well involved, firm, admitting the index finger in the external os and the internal os being practically closed. The circulation seemed to be good and the general appearance of the mucous membrane did not denote deficiency of the blood supply. Since this case it has been my practise to allow the ligature to remain.

My result in these cases would seem to demonstrate the fact that the cervix does not seriously suffer from the restricted blood supply and that collateral circulation is established to a sufficient extent. My reason for allowing this ligature to remain is on account of the lessened power of contraction and retraction of the lower uterine segment as well as a normal paralysis of the uterine wall which always occurs to a greater or less extent at the placental site.

In reviewing these eleven cases I must say that I seriously regret the loss of the second and third cases and believe these lives to have been lost owing to the fact that at that time I was not absolutely confident that my method would control hemorrhage to the extent that waiting until the shock had been combated was justifiable. Since that time my observations on these cases have led me to believe that the proper method of handling these two cases would have been to have applied the ligatures, after which to have resorted to the usual method of combating hemorrhage and waiting until such time as I saw that collateral circulation was becoming established. I believe that under ordinary circumstances this would be in the neighborhood of one hour and while waiting this length of time would no doubt absolutely cause the death of the fetus, still in neither of these cases would evidence of fetal life be found prior to my attempt at delivery.

The history of ligation of the uterine artery can be summed up briefly as follows:

"Fritsche was the first one to practice in 1885 the ligation of the uterine arteries for the treatment of hemorrhagic metritis; he advocates it also to stop hemorrhages when other measures fail. He

performs this ligature openly through the vagina. In 1888 Baumgärtner published a work upon the ligation of uterine bloodvessels in cases of cancers not operable. He ties the uterine arteries through the vagina when he can, cuts them and pinches them in more difficult cases, takes them at their origin at the hypogastrium when the way through the vagina is not practicable. Gubareff advocated, in 1889, a process of transperitoneal ligation of spermatic vessels which Sneguireff applies upon the living to produce the atrophy of fibromas. During the following year, Rydygier recommended the intra-peritoneal ligation when the enucleation of the fibroma is not possible."

At about the same time Dorsett, in America, considered the question. He advised the ligation of the uterine arteries and gives a process of vaginal ligation of this bloodvessel. Until this time the question of treating fibromas by arterial ligation was only examined incidentally. Dorsett, who advises it plainly, did not practice it, while in 1882, Gottschalk and Franklin Martin published two important cases. They are the ones who made a most important study of the question and arrived at the same practical conclusions. Since then Boldt, December 5, 1893, sent a communication to the Obstetrical Society of New York, which brought from Adams and King some interesting personal facts concerning the ligation of the uterine arteries. Greene published two successful cases in 1894. Goelet, another case; fearing that he could not stop the hemorrhage with the ligatures en masse, he advised to cut the vessels and then to tie them. "Frederick is not afraid to handle large fibromas extending above the umbilicus and he publishes five successful operations; in one case the patient even became pregnant."

"In Europe the publications on the subject are not so numerous. Some of the operations have been performed in Denmark by Howitz, by F. Levy and by Bauli; they are related in the works of Kuhn. In Russia, Altucheff and Sneguireff have studied a new process of ligation of the uterine artery. And this is about all."

In France, MM. Schwartz and Rochard have, through want of better means, practiced the pinching of uterine arteries; Prof. Terrier, being unable to perform castration, was satisfied to make a ligation upon the accessible ligament; recently M. Tuffier did likewise. All of them resorted to the ligation only when their cases were either not operable or not amenable to treatment. We believe that they were the first ones in France to deliberately attempt to perform the ligation of the arteries in

cases of operable fibromas, and to have advised systematically the operation when the fibromas were not likely to produce inflammation."

Comparatively few references are found in modern text-books, but in *Treves Surgical Anatomy* mention is made of the procedure as a means of controlling hemorrhages from inoperable fibroids of the uterus.

Vineberg of New York, states that in some of his cases he did have sloughing of the cervix.

The only reference I am able to find that has an obstetrical bearing is one by Dorsett in which he states that he has ligated the uterine artery four times for hemorrhage consequent upon obstetrical lacerations of the cervix.

Feeling that my opportunity for searching literature was comparatively limited, I secured the services of Dr. Charles Pfender, of Washington, and quote the following paragraph from his letter:

"I ransacked the literature of the Surgeon General Library, as extensively as was possible in the limited time, in the hope of finding report of operation in question for control of placenta previa hemorrhage, but failed to find a single report anywhere. I feel sure that it has never been done before, at least it has not been reported as such. Brevity of time prevented quoting of references and articles looked through on the subject."

SUMMARY.

To summarize I would state:

First: The operation of vaginal ligation of the uterine artery and its branches may be considered as a simple operation, devoid of danger and may be done without anesthesia, by anyone who is familiar with the anatomical and the surgical technic of the parts involved.

Second: The operation does not remove nor permanently injure any of the essential organs of generation and therefore does not in any manner decrease the possibility of future child-bearing, nor increase the hazard if conception should take place, as proven by the fact that the first case delivered by this method has since given birth to a full term healthy child.

Third: The tying of the uterine artery immediately and absolutely controls all ante-partum hemorrhage by cutting off the blood supply to the placenta. The single exception is the rare hemorrhage during delivery caused by injury to the fetal vessels.

Fourth: I believe collateral circulation would not be established until sufficient time had elapsed

for us to successfully combat a moderately severe degree of anemia before proceeding to deliver.

Fifth: By removing the necessity of haste it gives time for thorough preparation of the patient and the aseptic technic of the operator.

Sixth: It permits of leisurely dilating the os either bi-manually or by means of one of the many forms of the instrumental dilators.

Seventh: The fetus may be delivered either by version or the head may be delivered first by the application of forceps.

Eighth: The operation will become a routine practice of great value in all bleeding from placenta previa prior to any attempt at delivery.

Ninth: The ligation of the uterine artery will absolutely control post-partum hemorrhage from the placental site and with careful attention to the proper method of delivery post-partum hemorrhage in cases of placenta previa from other sources are rare.

Tenth: It will, no doubt, slightly increase the fetal mortality on account of the early shutting off of the placental circulation.

Eleventh: It so aids us in handling cases of placenta previa that no mortality should occur except from unavoidable sepsis.

It gives me great pleasure to state that the originator of this method, in so far as I am able to determine, is and has been, one of our most worthy members, and it was he who first suggested the matter to me and the first case reported in this series was the case in which the uterine artery was first tied by him and I believe the first time such a procedure has been done in the history of obstetrics.

In conclusion, I can only state that while my cases are comparatively few, still the observations I have made has led me to believe that this method is a great advance in the obstetric art and that this advance is due to the patient study and investigation of my friend and confrere, Dr. Simpson.

Dr. Boyce, Dr. Chalfant and Dr. Boyd have rendered valuable assistance in the delivery of one of these patients and also valuable suggestions during the preparation of this paper.

AN ECONOMICAL ABSORBENT MATERIAL.

The ordinary cotton waste used for cleaning machinery, and that can be purchased for less than half the price of absorbent cotton, can be made thoroughly absorbent by boiling in a soda solution and makes an excellent filling for vulva pads.—CHARLOTTE A. AIKENS, *Hospital Training School Methods and The Head Nurse*.

THE CORRECTION OF EXTERNAL NASAL DEFORMITIES; REPORT OF CASE.

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Before entering upon a detailed report of a special case the writer believes that a short résumé of the various methods adopted and advocated by different surgeons for the correction of recent and old injuries to the nasal structures cannot fail to be of interest.

It has been well said by a recent writer¹ that "neither in the works on surgery, nor in the special works on the nose and throat, is there much infor-

necessity of an intra-nasal dressing. This method will be referred to more fully later on.

The dressing advocated by Roe,⁵ which consists of a metallic form made from a sheet of aluminum and restrained in place by a piece of rubber adhesive plaster, is especially useful in selected cases. The Adams⁶ nasal truss, and the device of Cobb,⁷ are specially adapted to lateral displacements of the nasal bones of recent or long standing.

This cursory review of the literature on the treatment of nasal deformities, due to traumatism, although incomplete, still contains, the writer believes, about all the essential advances in this line of special surgery.

In what follows no attempt has been made to introduce any novel methods of treatment, but an ef-



Photograph A.

mation about this subject, and yet an injury deflecting the nasal bones causes a deformity very apparent and disagreeable throughout life, besides often obstructing one of the nostrils."

Hamilton,² in his earlier editions, advocated the use of pledgets of patent lint, "smeared with simple cerate," pushed up into the nasal cavities in severe injuries of the nasal bones.

Canulas were advocated by Boyer, and Bell.³

Owing to the irritation caused by these dressings and the intolerance of the nasal mucous membrane to foreign bodies, Mason⁴ was led to devise a method which not only made it possible to retain the fragments in position, but also did away with the



Photograph B.

fort has been made by means of an illustrated case, to show the advantages of the adaptation or employment of two or more recognized methods for the accomplishment of a given result.

The reduction of recent nasal deformities, however marked, is not a difficult task, as the tissues are readily molded into shape. But the retention of the reduced structures in place by dressings which will at once be comfortable and aseptic, will in many instances baffle the ingenuity of the most experienced specialist. Especially is this the case in deformities of long standing. The writer would hardly have undertaken so difficult and apparently unpromising a case for cosmetic effects as the one to be reported, had it not been for the encouragement

¹ Fractures of the Nasal Bones. *New York Medical Journal*, March 12, 1898.

² *Fractures and Dislocations*. 6th Edition. Page 103.

³ *Ibid.*

⁴ Fractures of the Nasal Bones Treated by an Improved Method. *Annals of the Anatomical and Surgical Society*, Vol. 11, No. 5.

⁵ *American Text-Book of Diseases of the Eye, Ear, Throat and Nose*. Page 1121.

⁶ *Ibid.*

⁷ Fractures of the Nasal Bones. *New York Medical Journal*, March 12, 1898.

received from the report of a similar case by Dr. Behrens.*

Frances C., aged 28 years; seamstress; applied for treatment at the St. Bartholomew's Clinic. The following history was obtained:

Eight years ago there was a severe injury to the nose due to a direct blow. The nasal bones were fractured, spread apart and the entire bridge of the nose flattened, as indicated in photograph A, and also more fully shown in a plaster cast made just prior to operation. Since the injury there has been more or less impairment of hearing, especially in the left ear; breathing capacity fairly good, although the left naris seems to be most obstructed. Father

with the little finger, and broken up any inflammatory adhesions that existed, an Adams' septum forceps covered with rubber tubing was introduced in either side and the nasal bone re-fractured and thoroughly mobilized. The thickened septum was then incised longitudinally, and with the forceps before mentioned the structures were torn from their nasal attachments and lifted forcibly into place, the lateral deviation of the septum being at the same time corrected.

The treatment of fractured nasal bones, as employed by Mason, and already referred to, was now resorted to to retain the tissues in place. It will be recalled that by this method two or three ordinary



Photograph C.



Photograph D.

died of Bright's disease; family history otherwise good. Has never had any illness. No evidence of lues, or constitutional taint of any kind. Functional examination of the ears revealed the fact that the hearing power of the left ear was reduced one-half, and that of the right ear was also somewhat impaired. Examination of the nose revealed a hypertrophic rhinitis; angular deviation of the septum and considerable thickening of this structure, corresponding in the main to the external deformity as shown in the plaster cast. Marked hypertrophy of the middle turbinals and a generally thickened and congested condition of the entire naso-pharyngeal mucosa.

On February 12, 1899, the patient was anesthetized and the deformity corrected in the following manner: After having explored the inferior meati

surgeon's needles are made to pass through the skin on either side and through the line of fracture, when symmetrical. When bone is encountered this is drilled through. The position of the needle is always regulated by the situation and extent of the fracture.

After the introduction of the needles they are retained in place by a piece of rubber band, slipped over the head and point of the respective needles. The point should also be protected by small pieces of cork.

Besides the dressing just mentioned two small Asch vulcanized rubber nasal splints, narrowed and modeled to conform to the parts, by the application of heat, were introduced underneath the needles as an extra support and precaution against possible return of deformity after removal of dressing. The completed dressing is shown in photograph B. The vulcanized splints were removed, cleansed and re-

* The Rebuilding of the Nose Without the Use of an Artificial Bridge. *Laryngoscope*, March, 1908.

introduced daily during healing process. Besides, the naso-pharynx was thoroughly sprayed and douched with normal saline solution. At the end of sixteen days as there was some ulceration and irritation at the points of exit of the needle, and as their removal did not seem to alter the contour of the nose, the dressing was removed, together with the nasal splints, and a temporary clip, as illustrated in photograph C, was ordered to be worn for a short period (two weeks). At the end of this time the tissues having apparently fully healed, and no deformity resulting from the removal of the temporary dressing, all appliances were discontinued and the naso-pharynx ordered sprayed and cleansed daily by the patient. The result obtained is sufficiently illus-

of extreme deformity, being a compound comminuted fracture of the nasal bone, with fracture of the nasal processes of the superior maxilla.

179 SCHERMERHORN STREET.

REPORT OF A CASE OF PULMONARY EMBOLISM FOLLOWING INJECTION OF SALICYLATE OF MERCURY IN ALBOLINE.

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Mr. M. is 42 years of age. He had a most marked superficial glossitis, aggravated by intemperate smoking, for which he placed himself under treatment about a year ago. The surface of the tongue was white except for numerous ulcerations and deep furrows, the papillae were smoothed and the edges of the tongue were serrated, corresponding to the spaces between the teeth. The corners of the mouth were covered with persistent ulcerations.

The patient has never had an initial lesion, to the best of his knowledge, nor any later evidences of syphilis; nor has his wife or either of two children ever presented any sign of that disease. In consequence of the foregoing facts I hesitated before subjecting him to anti-syphilitic treatment and attempted various local measures together with materially reducing his smoking.

After several weeks of treatment with no apparent improvement, I thought it wise to try injections of mercury. I used the salicylate in albolene, followed later by iodid of potash. Almost from the first injection there was improvement. The patient then remained away until two months ago. Upon his return he said that his tongue had been very much better but that the trouble had recurred. I therefore had no hesitancy in returning to the injection of mercury.

My injection was made at the usual site in the buttock and I employed the accustomed technic advocated by Lesser, of disengaging the syringe from the needle before injecting, in order to assure myself that I had not penetrated a bloodvessel. After withdrawing the needle some trifling bleeding followed, which, however, stopped almost immediately. Hardly did forty-five seconds elapse when the patient was seized with a sudden paroxysm of severe and uncontrollable coughing. The coughing was incessant, he became much excited, and broke out into profuse perspiration. The coughs were short, there was no expectoration and several times for a moment there was alarming apnea.

After about one-half hour he seemed much better and went home. The following day he sent for me, but I was out of town. The next day, however, I visited him. He told me that the night following his visit to my office he felt well enough to play cards until late, but coughed constantly; that



Photograph E.

Photograph F.

trated by photograph D, and the plaster cast made after the tissues were completely solidified.

The points of interest in this case are:

The possibility of correction of nasal deformities of long standing.

The age of the patient and the length of time that had elapsed after injury before remedial measures were instituted.

The combined methods of treatment resulting in not only correcting the vertical displacement but also the angular displacement of the osseous and cartilaginous structures.

The advisability of operating, even for cosmetic effects.

The possibility of treating the naso-pharynx during the healing process.

The ease and comfort with which the dressings are worn, respiration not having been interfered with.

In this connection I am especially fortunate in being able, through the courtesy of Dr. Mason, to include in this article the photographs E and F, of the first case treated by the "needle method" of correcting fractures of the nasal bone. The case was one

night he knew he had fever and chilly sensations. He remained in bed, coughing incessantly, until I saw him about thirty-six hours after the injection. At this time his cough had abated much, he complained of a sharp sticking pain on the right side of the chest, posteriorly, and over this area was to be heard a shower of fine crepitations. A little codein controlled the cough and two days later he was entirely well except for the crepitations, which continued for some days.

I believe, from the sequence of events, that there is little doubt that the case is one of pulmonary embolism, due to the injection into a venous trunk of salicylate of mercury in albolene.

In 3,835 injections of insoluble salts of mercury in paraffin, Magnus Möller found lung complications to follow forty-three times, or once in every eighty-nine injections. In a second series of cases numbering 2,406, in which Lesser's expedient of disengaging the syringe before injection was employed, not one case of embolism ensued. Hartung showed, as perhaps my case also exemplifies, that Lesser's expedient is not infallible, and that the needle may be in the lumen of a vein, but that the intravascular pressure is not sufficient to force the blood through the needle and make its appearance externally.

It has been recently suggested to me to aspirate, using the loaded syringe for that purpose, just prior to depositing the medicament in the tissues. If the needle is in a vein, with this procedure, blood will freely enter the syringe. If the needle is not in a vein, blood will not be aspirated.

It is of interest to note that pulmonary emboli caused by experimental injection of paraffin or albolene are in the main milder than when these vehicles contain insoluble salts. The insoluble particles more often produce irritation and small areas of pneumonia.

A striking feature of pulmonary embolism following therapeutic injection is the mildness of the symptoms.

The symptoms may be classified as follows:

1. Pulmonary—
 - Coughing paroxysms
 - Apnea
 - Pain in chest
 - Bloody sputum
 - Physical signs in chest
2. General—
 - Chilly sensations
 - Fever
 - Disturbances of taste.
3. Absorption (occurring late)
 - Anemia
 - Albuminuria

Erythema
Stomatitis

It is of further interest to know that this accident is rarely followed by a fatal issue.

ACUTE PERFORATING GASTRIC AND DUODENAL ULCER.*

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(Concluded from the December Number.)

CASE VI.—Male, 38; admitted to the Presbyterian Hospital, October, 1907. Patient is moderately alcoholic and for the past year has been drinking heavily, especially whiskey, beer and gin. Nine years ago he had a chancre with secondary symptoms and five years ago an attack of chills and fever. Two days ago he had a cramp-like pain in the lower abdomen, which came on without warning. The pain shot back and forth from right to left, but seemed more severe on the right side, and in a few minutes became more general, being specially intense in the right upper quadrant. There was nausea and vomiting one half hour after the onset of the pain. Brandy, pepper and ginger were given to relieve the pain without effect. An ice-bag was applied and a cathartic was given by a physician after the patient was carried home. The bowels moved for the last time thirty-six hours before admission, with some relief to the pain, which was replaced by soreness in the upper right quadrant.

Twenty-four hours before admission, tenderness became more severe and seemed to be extending to the chest and back. No further vomiting occurred and the patient retained a small quantity of milk. The chief complaints are soreness in the abdomen and weakness.

Examination.—The abdomen is symmetrical, markedly distended and generally tympanitic. There is general tenderness, especially in the upper right quadrant; the point of maximum tenderness was one inch above and to the right of the umbilicus. The rigidity corresponded in its distribution to the tenderness and is present especially over the upper part of the right costal arch. There was auscultatory dullness in the right flank. The temperature was 100.4, pulse 92, and full, the respiration was 18. The leucocytes on the day of admission were 16,600, with 83 per cent. polymorphonuclear.

Operation (forty-eight hours after perforation) immediately after admission to the hospital. A vertical incision was made above the level of the umbilicus parallel to the outer border of the right rectus. On opening the peritoneal cavity a small amount of odorless yellow fluid appeared in the wound without gas. The gall-bladder was normal. The anterior surface of the junction of the first and second parts of the duodenum was reddened and

* Read by invitation before the New Jersey State Medical Association, Cape May, June 19th, 1908.

covered with fibrinous exudate. Above it and extending into the right flank were from six to eight ounces of yellow turbid fluid, evidently the contents of the duodenum. Near the centre of the fibrinous exudate, above referred to, was a small circular punched out perforation the size of a large pin head. This was found to be in the centre of an area of marked induration the size of a 25-cent piece. The perforation was closed by a purse-string suture of silk, reinforced by a Lembert suture. The region of the perforation was thoroughly cleansed with salt solution and two cigarette drains were introduced to the site of perforation and beyond. Closure.

Postoperative Condition.—There was considerable reaction for forty-eight hours with weakness and repeated vomiting of fluid. The pulse was, however, under 100 from the start. There was a small amount of sero-sanguinous discharge, the wound healing primarily. On the sixth day after operation, there was marked intestinal discharge for two days, irritating the surrounding skin. This rapidly closed and did not interfere with the movements of the bowels.

The abdominal rigidity was much relieved by operation. On his discharge from the hospital, the patient remained well for several months. At the end of that time, he developed right pleurisy with effusion for which the chest was aspirated several times. On leaving the hospital there was still a small amount of fluid in the right chest. There were no further gastric symptoms or interference with digestion.

CASE VII.—Male, 42; admitted to the hospital November 5th, 1907. Referred by Dr. F. W. Chamberlin. There has always been a tendency to constipation. The appetite has usually been very good. Patient has been drinking whiskey once a day for the past five or six years. His diet consists largely of starchy material. He has had frequent attacks of indigestion for fifteen years, associated with neuralgic sub-costal pain, coming on in attacks about twice a year, the pain being intermittent, and at times the attacks would last for as long as three weeks. With these attacks pyrosis and belching of gas have been present. The last attack occurred six weeks ago and the pain continued, although less severe, until the present attack. Fifteen minutes after taking breakfast, the patient had a sudden sharp pain beneath the costal arch, rapidly increasing in intensity and radiating to the right shoulder, accentuated by deep respiration and by flexion of the thighs. The patient is most comfortable when lying on the back. He does not try to turn over on account of the pain. There have been two attacks of vomiting, the first twenty minutes after the onset, the vomitus consisting of the stomach contents with no blood. Tenderness is present in the upper right quadrant. There is marked prostration.

Examination.—The abdomen is full and symmetrical in the lower half, but is not distended. There was dulness in both flanks and tympany in the centre. General rigidity was present, but was especially noticeable on the right side, and more above

than below, with resistance of the right costal arch. The area of the tenderness corresponds to that of the rigidity. Peristaltic activity normal. Rectal examination negative.

Immediate Operation.—Chloroform anesthesia. The peritoneal cavity was opened through a vertical incision above the level of the umbilicus, and parallel to the outer border of the right rectus, with subsequently a small suprapubic incision above the symphysis. The peritoneal cavity contained considerable turbid odorless fluid, especially between the liver and the right border of the stomach. On the anterior wall of the first part of the duodenum was a small punched out perforation about four millimeters in diameter in the centre of a small patch of induration. There was a large amount of similar turbid fluid in the pelvis, although examination through the upper incision before the counter opening was made seemed to show that the exudate had not passed below the level of the transverse colon. Closure of the perforation by a silk purse-string suture reinforced by two Lembert sutures and followed by irrigation of the entire abdominal cavity and pelvis with abundant saline solution. Two cigarette drains were introduced to the point of perforation and through the suprapubic incision to the bottom of the pelvis.

Postoperative Condition.—Vomiting and extreme thirst appeared on the first day, which were relieved in part by saline irrigation with a small amount of whiskey. Temperature 101°, pulse about 100, and general condition seemed excellent. No duodenal fistula developed. Convalescence interrupted by the formation of an ischiorectal abscess and by the occurrence of some pain without swelling in the left leg, simulating a possible phlebitis. Exudate proved sterile in both Morris space and pelvis. In excellent health June, 1908, six months after operation.

CASE VIII.—Male, 65; admitted to the Presbyterian Hospital, March, 1908. Patient has always lived under good hygienic conditions and has never indulged in excess in tobacco or alcohol, or other stimulants. There was a history of colitis thirty-five years ago, since when patient has been in excellent health. For a year past he has been suffering from indefinite pains and cramps in the abdomen with eructations of gas, the pain referred in general to the front of the abdomen and chest. About ten days before admission, there was an acute exacerbation of pain and eructations of gas were frequent. These pains were not localized but seemed to involve the stomach and lower chest. They did not appear to interfere materially with digestion nor with the movements of the bowels. Two days before admission the patient had a sudden agonizing pain general throughout the abdomen and shifting from one place to another on change of position. This pain was so severe that it caused him to double up and he had to be assisted home. On the day before admission, the pain became less severe but more persistent and became more localized in the upper right hypochondrium. At the same time, without premonition, projectile vomiting took place, the vom-

tus consisting of a large quantity of dark foul fluid material. The vomiting continued at intervals until admission. The prostration was so extreme that the patient lost both flesh and strength rapidly and appeared to shrink away. The bowels had not moved for three days prior to admission.

Examination.—The abdomen is slightly distended on the right side, but not on the left. The right side is rigid and does not move with respiration. Rigidity and tenderness are most marked in the upper right quadrant with dulness in the right flank, extending up to the right hypochondrium. There is distinct rigidity of the right costal arch. The tongue is coated. The patient has a very considerable degree of general arterial sclerosis. Leucocytosis 15,600, polymorphonuclear 90 per cent.

Operation.—Gas and ether anesthesia. The peritoneal cavity was opened through a vertical incision above the level of the umbilicus parallel to the outer margin of the right rectus muscle, and subsequently a mid-suprapubic incision one and one-half inches in length was also made. On opening the peritoneal cavity about one pint of thin dirty yellow, turbid, odorless fluid poured out into the wound. There was a small perforation, the size of a large pea, on the anterior surface of the first part of the duodenum from which fluid similar to that present in the peritoneal cavity, exuded. This was closed with a purse-string silk suture reinforced by a Lembert suture. The general peritoneal cavity was cleansed by irrigation with a large amount of salt solution and cigarette drains were introduced into the pelvis and to the site of perforation. The small intestine was moderately distended and in places covered by a fibrinous exudate; closure; operation lasted forty minutes.

Postoperative Condition.—Convalescence was very slow and associated for several weeks after the operation with a persistent diarrhea that was controlled only with considerable difficulty. The patient was greatly emaciated but took his nourishment at all times without difficulty. His pulse varied between 80 and 100, and was of fair volume. The temperature varied between 101° and 102°. The discharge was free but never contained intestinal contents. The suprapubic wound closed with much less discharge and much more promptly than the pararectal incision which, about three weeks after the operation, required a counter-opening for purposes of drainage. For the first six weeks after the operation patient had a troublesome cough with a purulent expectoration, but never showed any sign of consolidation. At one time about two ounces of clear serous fluid was withdrawn from the right pleural cavity just above the diaphragm. Three months after the operation, the patient is convalescent and gaining in strength every day.

Smear from the general peritoneal cavity showed streptococci and also Gram positive and negative bacilli.

Smear from exudate in the pelvis shows pus but no bacteria, while the culture from the exudate is sterile.

Urine at time of admission showed repeatedly a

faint trace of albumen with an average normal specific gravity. There were no casts.

CASE IX.—T. G., male, 50; admitted to the Presbyterian Hospital, October, 1903. On account of a condition of acute alcoholism, a satisfactory history prior to the patient's admission, could not be obtained. He was said to have been seized twenty-four hours before admission with severe cramp-like pain in the right hypochondrium, which has continued since. The patient complains of tenderness over the region of the gall-bladder and says that he is most comfortable in the dorsal position and that to turn over to the left is more painful than to turn over to the right side. Shortly after admission to the hospital, patient had several attacks of vomiting, the vomitus containing large amounts of whiskey.

On examination, the entire abdomen was held rigid, the rigidity being most pronounced in the right hypochondrium and the adjacent part of the right costal arch. Just below in the region of the gall-bladder there was, marked tenderness. The rigidity did not disappear when the patient fell asleep. The pulse was regular, varying between 70 and 80; and of good force. There was a general leucocytosis of 15000. The patient was admitted to the medical side of the hospital, a diagnosis of alcoholic cholecystitis having been made by the examining physician.

On the following day the patient's condition was unchanged, save that both pulse and temperature were somewhat higher. There was also constipation, a slight amount of flatus only passing the bowel. He was then transferred to the surgical division and prepared for immediate operation.

Gas and Ether Anesthesia.—Incision over the outer upper border of the right rectus. The peritoneal cavity contained a considerable amount of yellow serous fluid, the coils of small intestine being glued together with bands of fibrine. On separation of these adhesions a cavity was entered containing pus which increased in turbidity as the duodenum was approached. On the anterior wall of the second portion of the duodenum an orifice, the size of a lead pencil, and having a very hard edge, was exposed with a loop of small intestine adherent below. The orifice was closed by a purse-string suture of silk reinforced by Lembert sutures, and after local cleansing with salt solution of the abscess cavity, the abdominal wound was closed, a cigarette drain being inserted to the point of suture.

The patient rested well after the operation, there being considerable nausea for the first twenty-four hours. On the day following the operation, the pulse varied between 100 and 120. The patient was distinctly apathetic at times, evidently the result, in part at least, of the alcoholism. During the second twenty-four hours, the condition was unchanged. The vomiting had ceased and the patient had several large brown fecal movements after the insertion of a colocynth suppository. During the third and fourth days, restlessness with gradually increasing abdominal distension appeared, the patient dying at the end of the fourth day. No autopsy was allowed.

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WALTER M. BRICKNER, M.D., Editor

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PANCREATIC DISEASES AND THE CAMMIDGE REACTION.

The frequent co-existence of disease processes in various organs of the upper abdominal zone has been largely responsible for the uniform development of the surgery of those organs,—a development in which, however, the pancreas, the least accessible and least understood of the upper abdominal viscera is somewhat tardily participating. More complex in its functions and more difficult of approach than the gall-bladder, the pancreas cannot be expected for some years to yield to procedures as definitely accepted as those that govern the management of bile-tract affections. But the development of biliary surgery by demonstrating the frequent interdependence of biliary and pancreatic diseases, has greatly helped in clearing up the pathology of the latter, and in finding the way to their relief.

Diagnostically, pancreatic diseases are still not within our grasp. But the chapter on symptomatology in "The Pancreas, its Surgery and Pathology," by Mayo Robson and Cammidge (W. B. Saunders Co., 1907) quite demonstrates that the matter is not altogether guesswork, that a careful consideration of all the clinical data will often establish a fairly positive diagnosis.

This book, a successor to the earlier work by Robson and Moynihan, is more than its modest title

indicates. Written by two men whose names are closely linked with the subject, it is the last word on the human pancreas. In this work Cammidge described the third form ("C-Reaction") of the urinary test for pancreatic disease which he first published ("A-Reaction") in 1904, and which has since borne his name. Within the past year several observers have tested the Cammidge reaction (A, B and C methods) in several series of cases. Some of these report favorably on the diagnostic value of the test, while others are inclined to doubt its usefulness. It is but fair to insist that it takes some little experience to differentiate the crystals described by Cammidge from spurious crystals that may form from the precipitate, and also that the test, which is a lengthy and complicated procedure, must be conducted with great attention to detail. Moreover, Robson and Cammidge admit that the technic of the "pancreatic reaction," even in its latest form, is not as perfect as it might be. Nor do they rely upon this test alone in arriving at a diagnosis, "but always take into account the results of a complete analysis of the urine and a chemical examination of the feces, as well as the clinical symptoms."

Whatever the final verdict on the Cammidge reaction, it will probably be, at best, only a confirmatory test, and, unless it can be greatly simplified, which seems unlikely, it will not be employed except by practiced laboratory workers.

FACIAL PARAFFIN INJECTIONS.

Not long ago a damage suit was brought against a "dermatological institute" for the facial deformities resulting from an attempt to obliterate a woman's wrinkles by paraffin injections. This served, it is to be hoped, to call public attention to what surgeons from time to time have opportunity to observe—the mischief that is wrought by paraffin injection in the hands of the unskilful and the unscrupulous.

The advertising "beauty specialist," who preys on the vanity of the ignorant, is the chief offender in this direction, but he is probably not the only one. The regular physician whose experience in this field is small, as his effort is sincere, is equally apt to do mischief. Paraffin prosthesis requires a very exact technic, and no small amount of practice. Its employment should be left to those who are experienced in that technic and who have an accurate appreciation of the legitimate indications for and the limitations of, cosmetic injections.

Surgical Suggestions

W. M. B.

H. M. H.

In chronic catarrh, the first suggestion of ethmoidal sinus disease may be the appearance of thick, adherent, stringy mucus in the nasopharynx.

Polypi are not merely cystic tumors—they often spring from a base of diseased bone. Removing the polypi does not cure the disease; the affected bone necessarily must be removed.

Pain and swelling of the tip of the nose, is often caused by an infection of the hair follicles in the vestibule.

"Nose-picking" may result in a perforation of the septum.

An infection of the hair follicles of the nose is quickly relieved by the application of a 1% salve of yellow oxid of mercury.

A foreign body in the nose of a child is often suggested by a discharge of mucus from one side only.

Hard foreign bodies in the nose may sometimes be removed, where other means fail, by wiping the cavity and foreign body dry and applying sealing wax attached to cotton.

Small clinging pieces of adenoid tissue which have not been removed by the curette will very likely set up an inflammatory reaction on the posterior pharyngeal wall which is more distressing than the adenoids themselves.

Torticollis after adenoidectomy means a post-operative infection.

If on transillumination the maxillary antra are dark, it does not necessarily mean that pus is present. Thick granulations may be covering the antral wall.

One should not rely on feeling a tonsil engaged in a tonsillitome; he should see that it is if he does not wish to take the chance of cutting away the pillars of the fauces, a portion of the tongue, the floor of the mouth or the uvula.

Book Reviews.

General Surgery. A Presentation of the Scientific Principles Upon Which the Practice of Modern Surgery is Based. By EHRICH LEXER, Professor of Surgery, University of Königsberg. *American Edition*, edited by ARTHUR DEAN BEVAN, M.D., Professor and Head of the Department of Surgery, Rush Medical College, Chicago. An authorized translation of the second German edition by DEAN LEWIS, M.D., Assistant Professor of Surgery, Rush Medical College. Large octavo; 1041 pages; 449 illustrations (some in colors) and 2 colored plates. New York and London: D. APPLETON AND COMPANY, 1908.

Prof. Lexer's "Lehrbuch der Allgemeine Chirurgie" presents more thoroughly than any other recent work the modern conceptions of surgical pathology and general surgical indications. The recognition of its value exhausted the first edition within a year. The second edition is the basis of this English translation—a preparation that deserves commendation, since (as far as the reviewer knows, at any rate) there is no American work of recent writing devoted to General Surgery (the "Principles" or "Science" of Surgery). One may safely predict for this American edition, therefore, the same popularity that the original is enjoying abroad.

The translation has been faithful to the author, yet the editor and the translator have not hesitated to add a great deal of valuable material. Altogether, there are many pages of descriptive matter and about 100 new illustrations contributed to the work by Prof. Bevan's clinic.

It is unnecessary to enter into a review of the contents of the book. Briefly stated, it covers all the subjects belonging to "general" surgery—the general "pathology and therapeutics and operative technic which apply to all fields of surgery." Thus, the work concerns itself with wounds; aseptic technic; anesthesia; general principles of plastic operations; infection; infectious diseases and immunity; necrosis; injuries of the various tissues; diseases of various tissues; tumors; and cysts. We wish, however, to call attention to the special features added by the American editor.

A well illustrated chapter is contributed by Oliver Ormsby on *blastomycosis* (a disease to which many European and some American authorities are inclined to deny a separate entity.) Rosenow has written, for this edition, a chapter—rather too brief—on *surgical hematology*. It touches on bacteriology of the blood, hematozoa, leucocytosis, coagulation, (the relation of) hemoglobin and the erythrocytes, and cryoscopy. There is an appendix containing an abstract of Crile's work on *direct blood transfusion*, and another by Rosenow, on *opsonins and the therapeutic inoculation of dead bacteria*. These three last-named sections represent the subjects quite properly, as still very much "in the making." The most important history of hematology, transfusion, and vaccine therapy is probably to be written in the next few years.

Among other relatively recent subjects it is of interest to note that Bier's hyperemia, if applied early, is credited with securing good functional results, after phlegmon of the tendon sheaths and suppurative arthritis, more often than is seen after treatment by the usual method; beyond this, however, Bier's method is referred to with scant enthusiasm and not without even some mistrust.

As in the German edition there is a bibliography at the end of each chapter.

References to Prof. Lexer in current surgical literature indicate much confusion as to whether he spells his given name Ehrich or Erich. Bevan, himself, either to please everybody or because he, too, is in doubt, spells it Ehrich on his title-page and Erich in his preface. We are inclined to forgive him this oversight or playfulness—which ever it be; and we seriously congratulate him on the excellent manner in which he has prepared for his American and English colleagues an improved edition of a most acceptable work.

A Text-Book of Operative Surgery. Covering the Surgical Anatomy and Operative Technic involved in the

Operations of General Surgery. Designed for Practitioners and Students. By WARREN STONE BICKHAM, M.D., PHAR.M., Junior Surgeon, Touro Hospital, New Orleans; late Assistant Instructor in Operative Surgery, College of Physicians and Surgeons, New York, etc. *Third Edition.* Large octavo; 1,206 pages; 854 illustrations. Philadelphia and London: W. B. SAUNDERS COMPANY, 1908.

An intending purchaser of a book on operative surgery, in English, will no doubt consider the excellent works of Jacobson and Rowlands, of Bryant, of Binnie and of Bickham. The first of these (of which the fifth edition appeared in 1908; earlier editions by Jacobson and Steward) covers over 2000 pages, in two volumes. It is an exhaustive exposition of the subject, in which, however, English surgeons and methods are given especial prominence; it is illustrated profusely, but not elaborately. Bryant's classic (fourth edition, 1905) covers 1500 pages and also appears in two volumes. It, too, is very complete. Binnie's splendid and justly popular little work is well presented in comparatively small space.

Bickham's *Operative Surgery*, the third edition of which has just appeared, differs from all of these. It appears in a single volume of 1200 pages; and it is reasonably complete, though not exhaustive. The first edition, 1903, secured immediate favor. A second edition appeared in 1904 and was three times reprinted. It contained 984 pages and 559 illustrations. In the preparation of the present edition "29 pages of text, covering 25 operations, have been dropped; 123 pages of text, descriptive of 106 operations, have been added; 42 old pictures have been omitted; 45 old pictures have been redrawn; and 331 pictures have been added."

The new edition is a handsomely prepared exposition of modern general surgical operations, accurately described. The selection of material to be included in such a work is a task of no small magnitude, and critics may be inclined to disagree with the author's judgment in some places. The reviewer himself would complain, for example, that although Bickham describes several methods of dealing with the appendix stump, he makes no reference to the simplest of all methods, the application of a crushing ligature and cauterization with carbolic acid—a method that is not only time-saving but is also least apt to provoke adhesions. Again, Bickham describes Murphy's abandoned method of arterial suture, and the methods of Bickham, Glück, Salomoni and Tomaselli, and of Bouglé; and he fully describes, with three illustrations, Brewer's attempt to close arterial wounds by means of adhesive rubber plaster—an effort concerning which nothing further has been heard since its publication. But we fail to find any description of Carrel's technic of bloodvessel suture, or any reference to his monumental work. Similarly, intravenous saline infusion is described, but nothing is said of transfusion.

Bickham seems to have exercised care in crediting operations to their originators, but he might well have included references to the original descriptions.

There are no chapters on general operative technic, sterilization, etc.

We know of no work, in English, on operative surgery, comprehensive and limited to one volume, as good as this and published in as attractive a form.

Blood Examination in Surgical Diagnosis. A Practical Study of Its Scope and Technic. By IRA S. WILE, M.D., New York. Duodecimo; 161 pages; 35 illustrations and 1 double-page colored plate. New York: SURGERY PUBLISHING COMPANY, 1908. Cloth, price \$2.00; ooze leather, price \$3.00.

The diagnostic and prognostic value of blood examinations in a fairly wide range of surgical conditions has been definitely established. Much of the information on hematological diagnosis is scattered in monographs confusing in their varied terminology, or presented in textbooks of more or less elaborate proportions. There is room, therefore, for a practical manual stating in a concise form the technic and the accepted data of blood examination in surgical diagnosis. Just such a book Wile has prepared.

In its plan and in many details the work is quite original.

The subject is presented very clearly. No previous experience in hematology is necessary to understand and follow it; and the book ought to prove of service, therefore, to those practitioners who have not had the benefit of training in this field, and of especial value to hospital internes on whom this diagnostic work falls. In the text, as the preface states, "the point of view is that of the surgeon, the observations those of the hematologist, the interpretations those of the surgeon and hematologist."

Although written especially as a guide in the diagnosis of surgical conditions, the blood findings in "medical" affections are also described seriatim, in order to present the differing data. Thus we find included an ample discussion of the various anemias and leukemias, the newest blood findings in pertussis, parotiditis, etc. Sudanophilia, iodophilia, Arneith's nuclear counts and other recent contributions to hematology are all described.

The method of studying leucocytes in order to determine the various types is original; it bases the description of the white blood cells upon the form of the nucleus or the presence of granules.

The interpretation of leucocyte counts and differential counts is clear, full and suggestive. It is a concise but complete exposition of this most important subject.

The chapter on anemias is also unique. The classification proposed by the author is upon a hematological basis—on alterations of the blood structure—and not upon a mixed clinical and etiological basis. "Primary anemias" Wile does not believe exists; he believes that they are the result of other conditions not yet recognized. Hodgkin's disease he excluded from the category of blood diseases.

The chapter dealing with surgical operations is logically arranged and includes the effects upon the blood of drugs, anesthetics, shock, hemorrhage, the operation itself, and the post-operative complications.

The section on blood cultures is too brief to afford more than elementary information. The author gives this subject but scant consideration for the reason that it belongs to the domain of bacteriology rather than to that of clinical microscopy. Without enlarging upon his outline of the technic, he might well have devoted a separate chapter to the indications for and interpretation of blood cultures.

As a bit of book-making this volume easily excels the average manual. The typography is clear and attractive, and the marginal notes in red are as neat as they are useful. The double-page colored plate shows six blood pictures and in addition 29 illustrations of the various types of cells as they appear with the Jenner stain. While these will serve to interpret the numerous other blood pictures printed only in black, it would have added to the value of the book—no doubt, also to its cost—if these, too, were all in colors.

We recommend Wile's "Blood Examination in Surgical Diagnosis" as a well conceived, precise and altogether practical manual.

The Surgery of the Ear. By SAMUEL J. KOPETZKY, M.D., Attending Otologist, N. Y. City Children's Hospitals and Schools, and N. Y. Red Cross Hospital; Assistant Surgeon and Instructor in Operative Surgery of the Ear, Manhattan Eye, Ear and Throat Hospital; Pathologist and Surgeon, N. Y. Throat, Nose and Lung Hospital, etc. Octavo; 368 pages; 66 illustrations. New York: REBMAN COMPANY, 1908. Price, \$4.00.

Recent literature on aural affections, of voluminous proportions, is representative of considerable elaboration in surgical methods and diagnostic refinements. Witness the contributions to the recognition and treatment of labyrinth suppuration. It has been the aim of this author "to correlate the extensive literature with personal experience and observations, and produce a volume adapted to the needs of the medical student, the practitioner and the specialist."

We believe that he has succeeded to a very large extent in accomplishing his purpose. At any rate, he has prepared an exposition of modern ear surgery, condensed within limits convenient to the non-specialist, yet comprehensive and including references to the most important contributions to the literature.

The descriptions of operations are, for the most part, very clear, and indicate an intimate acquaintance with the

anatomy involved and a clear conception of the disease process to be dealt with. Indications, technic and after treatment, are dealt with in considerable detail. In some instances the descriptions of the operative measures are too concise, however.

At the end of each chapter is a reference to the articles consulted. The total of these is a formidable list, including 300 or more authors!

The book is divided into 14 chapters. Of these, the chapters on *lumbar puncture* and on the *surgery of the labyrinth* deserve especial mention, but all are well written. The text is an example of good style in medical composition! While a chapter on anatomy is, of course, not essential to such a work, we believe that it would have been by no means out of place here.

The illustrations are excellent, and most of them are original. They include 34 half-tone reproductions of drawings by K. K. Busse, who also contributed the line sketches. A picture of the adult temporal bone is used as a frontispiece—a heritage in book publishing that, for scientific works, at any rate, deserves to be relegated to the limbo of fashions outgrown.

Nouveau Traite de Chirurgie. Publié sous la direction de A. LE DENTU et PIERRE DELBET. Vol. VII. **Maladies des Articulations.** Par PL. MAUCLAIRE et CH. DUJARIER. Octavo; 288 pages. Paris: J.-B. BAILLIÈRE ET FILS, 1908.

This volume contains an introductory chapter on diseases of the articulations. The non-microbic inflammations are then considered—plastic synovitis, non-traumatic hemarthrosis, chronic ankylosing osteoarthritis, and toxic joint inflammations. The microbic joint affections receive extended exposition—tuberculous, syphilitic, gonorrhoeic and rheumatoid. Joint bodies and arthritis deformans are dealt with in the succeeding chapters. Arthritides due to nervous diseases are very fully gone into, hysterical manifestations being of particular interest. A long chapter on ankylosis, with detailed description of mechano-therapeutic methods, and a shorter one of joint tumors, concludes the volume. Good x-ray plates and a full bibliography make this monograph particularly valuable.

Zeitschrift für Gynäkologische Urologie. Edited by PROF. DR. W. STOECKEL, of Marburg. Published by JOHANN BARTH, Leipzig.

This is a new periodical designed as an especial organ for publications dealing with urology from a gynecological aspect. The first number contains six contributions by well-known men. Franz discusses lesions of the urinary tract after radical operations for carcinoma of the uterus. Severe cystitis seems the most constant, and is best kept within bounds by means of a permanent catheter. Baisch deals with bladder hemorrhage in incarcerated retroflexed gravid uterus. Mirabeau describes the connection of gynecological troubles and intermittent hydronephrosis. He cites interesting cases in which the menstrual congestion brought on periodic occlusion of the ureter. Henkel publishes his studies with various agents in the treatment of chronic cysto-pyelitis. Stoeckel discusses the treatment of pyelitis in pregnancy; he favors local treatment of the renal pelvis. The concluding paper by Knarr takes up the present status of kidney diagnosis. He believes in the value of the indigo-carmin test combined with ureter catheterization; regards Albarran's functional test (leaving in the ureter catheter for 2-3 hours and giving forced fluid) as important, but places no reliance in the phloridzin method.

This new periodical, of necessarily limited scope, will prove valuable if it continues to contain as important contributions as the first number.

Medical Inspection of Schools. By LUTHER HALSEY GULICK, M.D., Director of Physical Training, New York Public Schools, and LEONARD P. AYRES, General Superintendent of Schools of Porto Rico, 1906-1908. Small octavo; 275 pages. New York: CHARITIES PUBLICATION COMMITTEE FOR THE RUSSELL SAGE FOUNDATION, 1908. Price, \$1.00.

This interesting compilation, the first American work on the subject, is the second book issued by the Charities Pub-

lication Committee for the Russell Sage Foundation. It is a by-product of the "Backward Children Investigation" inaugurated a year ago, and supported by the Foundation.

The Historical Chapter tells us that the movement of school inspection is national in scope in England, France, Belgium, Sweden, Switzerland, Bulgaria, Japan, Argentine Republic and practically so in Germany. In the United States over one hundred cities and more than three hundred towns have more or less thorough systems. Massachusetts has a compulsory medical inspection law, New Jersey has a permissive one, Vermont a law requiring the annual testing of the vision and hearing of all school children, and Connecticut one providing for such tests triennially. The United States, contrary to the belief of many, has by no means been the leader in this communal work.

This work is eminently practical. It outlines the various systems of school inspection in operation; it is replete with forms and blanks which have proved most valuable in practice. Such practical considerations as the number of pupils who may properly be cared for by one medical inspector, the *per capita* of the work, and the most successful forms of administration, are here gathered together in convenient form. All phases of the subject are considered—medical, legal, educational, administrative, and sociological.

An extensive bibliography of the subject is added,—an important feature of particular value to librarians, school authorities, and students of social subjects.

Lehrbuch und Atlas der Zahnheilkunde mit Einschluss der Mundkrankheiten. Dr. Med. und Phil. GUSTAV PREISWERK, Lektor an der Universität Basel. *Second edition*, revised. Duodecimo; 398 pages; 44 colored plates and 138 other illustrations. München: J. F. LEHMANN, 1908.

The second edition of this atlas is marked by seven new color plates, numerous new illustrations, and a corresponding enlargement and revision of the text. The work is by no means limited in its usefulness to dentists; on the contrary, it delineates beautifully the gross and microscopic appearances of many rare and common surgical affections of the mouth and jaws, as well as of tooth conditions of surgical importance.

Even to one unfamiliar with German, the artistic colored plates (characteristic of Lehmann's atlases) will be of value.

Woman: A Treatise on the Normal and Pathological Emotions of Feminine Love. By BERNARD S. TALMEY, M.D., Gynecologist to the Yorkville Hospital and Dispensary; former Pathologist to The Mothers' and Babies' Hospital, etc., New York. *Third Edition.* Duodecimo; 258 pages; 23 drawings. Philadelphia: MEDICAL COUNCIL, Selling Agent. 1908.

The repeated editions of this volume within a few months bespeak its popularity. The author has chosen a theme that overlaps both true medical science and extravagant sentimentalism. However, the subject is handled well and reveals many points in the psychology of "Woman" sexually which are worthy of consideration.

Books Received

The Physician's Visiting List for 1909. (Fifty-eighth year of publication.) Philadelphia: P. BLAKISTON'S SON & Co. Price, \$1.00.

On Infantilism from Chronic Intestinal Infection. Characterized by the Overgrowth and Persistence of Flora of the Nursing Period. A Study of the Clinical Course, Bacteriology, Chemistry and Therapeutics of Arrested Development in Infancy. By C. A. HERTER, M.D., Professor of Pharmacology and Therapeutics, Columbia University. Duodecimo; 118 pages. New York: THE MACMILLAN COMPANY, 1908. Price, 90 cents.

Progress in Surgery.

A Résumé of Recent Literature.

Perforating Wounds of the Uterus Inflicted During the Course of Intrauterine Instrumentation. ARMÉ PAUL HEINECK, Chicago. *Surgery, Gynecology and Obstetrics*, October, 1908.

Heineck analyzes over 160 cases. His conclusions are:

1. Pseudo-perforation of the uterus, though of exceptional occurrence, is a condition that occasionally confronts the surgeon.
2. Spontaneous perforations of the uterus, due to pre-existing pathological conditions of this organ, can and do occur.
3. Perforating wounds of the uterus, intra-peritoneal or extra-peritoneal, have a morbidity and mortality, increasing in direct ratio with the inexperience, carelessness and uncleanness of the operator. The expert recognizes at once the making of a false passage and institutes proper treatment. High surgical skill may convert an apparently hopeless case into a recovery. In the 154 cases reported, there were 42 deaths, 108 recoveries. The result is not stated in 4 cases. Expectant treatment was pursued in 66 cases. There were 21 deaths in this series. Laparotomy, including what intra-abdominal repair appeared necessary to the operator, was performed 72 times. There were 52 recoveries, 17 deaths and 3 unstated results in this series. Vaginal hysterectomy was done 15 times; there resulted 10 recoveries, 4 deaths and one result not stated.
4. Dilatation of the cervical canal and instrumental curettage of the uterine cavity are, owing to their associated dangers, not office operations. The rule should be:
 - a. No uterine curettage without general anesthesia.
 - b. No curettage without ample cervical dilatation.
6. Intra-uterine instrumental maneuvers should only be attempted by those:
 - a. Who are thoroughly conversant with modern surgical asepsis and antisepsis. In an uncomplicated perforating wound of the uterus, the traumatism of the uterus plays but a secondary rôle; the pre-existence, or the implantation of infections at the time of perforation or subsequently, commands the situation.
 - b. Who are capable of recognizing malpositions of the uterus as well as pathological conditions of that and of neighboring organs.
 - c. Who are acquainted with the dangers incident to the successive steps of the intrauterine operation, which they are performing. The steel dilator is an instrument of too much power, and the curette is too dangerous a weapon to be used by the novice.
7. Once the uterus is perforated, all further instrumentations must be suspended. If it be imperative that the contents of the uterus be removed, this must be done by digital curettage, or it may be done with a curette, whilst the uterus is being watched through a laparotomy incision.
8. A perforated uterus should never be mopped or swabbed with caustics or irritating antiseptics.
9. A perforated uterus should never be irrigated. Every case, in which it is definitely stated that the perforated uterus was not irrigated, recovered.
10. Vaginal hysterectomy is an operation not to be performed in the treatment of perforating wounds of the uterus. It involves:
 - a. The sacrifice of an organ which may not be perforated.
 - b. The sacrifice of an organ, which, though perforated, most always can, with little difficulty to the operator and with much advantage to the patient, be saved.
 - c. It does not enable the operator to either exactly determine the presence or absence of other co-existing intra-abdominal lesions, nor does it enable him to repair them.
11. If the perforated wound has been inflicted upon a non-septic uterus during the course of an aseptic intra-uterine maneuver, in the absence of complicating abdominal lesions, recovery is the rule.

12. The treatment of perforating wounds of the uterus is determined largely by the following conditions:

- a. The septicity or asepticity of the uterus and its contents.
- b. The septicity or asepticity of the perforating instrument.
- c. The presence or absence of coexisting vascular, omental or intestinal lesions.
- d. The size and number of the perforations. A piece of omentum may prolapse through a large rent. A coil of gut may become incarcerated or strangulated in a large perforation.

13. Treatment.

- a. If the uterus is non-septic, if the perforation instrument be aseptic and if it can also be reasonably assumed that there is an absence of omental or intestinal or important vascular lesions, the treatment to be followed is one of "armed expectancy." The patient must be confined to bed and immobilization enjoined for at least three days. She must be carefully watched. A suppurative cellulitis, signs of internal hemorrhage, etc., call for intervention. A wick of gauze may be inserted into the uterus, but it should not be introduced much beyond the internal os.
- b. In all cases in which there has been a prolapse of the omentum, or of intestines into the uterine cavity, in all cases in which associated injuries to the intestines or omentum coexist, or in which there are reasons to fear a significant internal hemorrhage, laparotomy is urgent.
- c. Once the abdominal wall has been opened, the visceral lesion must be repaired. The uterine puncture, if small, need not be sutured. If large or of the nature of a tear or a laceration, it is better that it be sutured. One or two layers of sutures may be used. Whether small or large, if the perforation be the seat of hemorrhage, suturing is indicated.

14. A healed perforation of the uterus apparently does not interfere with the normal development and the normal termination of a subsequent pregnancy.

The Anatomical Basis for Successful Repair of the Female Pelvic Outlet. I. L. HAYNES, New York. *American Journal of Obstetrics*, December, 1908.

The author has made a careful anatomical study of the muscular and fascial structures of the pelvis in nulliparous and parous women to determine the factors which bear upon successful treatment of perineal lacerations and rectocele. The anterior part of the pelvic outlet (it should be borne in mind that in the erect posture the outlet is practically parallel with the horizon) is formed by the triangular ligament, which Haynes for short calls the "perineal shelf"; the posterior part by the levator ani and pelvic fascia. The median portion of the levator runs between the inner surface of the pubis at the side of the vagina and rectum forming an inverted Y, one arm inserted in the perineal body, the other into the coccyx (pubo rectalis or pubo coccygeus). Still more mesially is a continuous muscular layer composed of the sphincter vaginae and sphincter ani which runs from pubis to coccyx; this Haynes calls the pubo-coccygeal hammock.

He exposes the muscles by a perineal flap-splitting operation. The pubo-coccygeus fibers are seen on either side and are united in the median line sufficiently high to obliterate the highest point of the rectocele. These sutures must be passed deep laterally to include both muscle and fascia. A more superficial layer of sutures is then taken in order to approximate the transversus perinei, sphincter vaginae and ani. The skin and mucosa are then sutured vertically. Of course appropriate measures are also taken to overcome associated lesions, such as cystocele, lacerated cervix, etc.

The Ultimate Results of the Alexander-Adams' Operation (*Die Dauererfolge des Alexander-Adams*). W. HANNES, Breslau. *Zentralblatt für Gynäkologie*, December 5, 1908.

This statistical report is based upon 147 operations performed for mobile retroflexion. Besides exposing the round ligament, the peritoneal reflectum was regularly opened in order to grasp the strongest part of the round

ligament. It was possible to re-examine 71 women. Three showed recurrence, the others being perfect anatomically. In one case a double hernia was found. Fifty-one women had subsequently borne children. Twenty-five women still complained of pain; in 14 of these the disease could be explained by non-gynecological troubles. On the whole, the results were very satisfactory, especially in regard to subsequent normal pregnancy.

The Treatment of Placenta Previa (*Zur Behandlung der Placenta praevia*). B. KRÖNIG, Freiburg. *Zentralblatt für Gynäkologie*, November 14, 1908.

Krönig emphasizes the distinction between obstetrics in practice and in the hospital. In hospital work a maternal mortality of 6-10 per cent. and a fetal death rate of 60-80 per cent. is still the rule in placenta previa. The author believes that many maternal deaths are due to bleeding in the third stage. Where the cervix is not yet dilated he advocates classical Caesarian section, reporting six cases without a death. The patients lost only 300 gms. of blood during and after operation. If the cervix is well dilated upon admission, version and extraction, followed by immediate manual removal of the placenta should be done. If oozing continues in spite of intrauterine irrigation rapid supravaginal hysterectomy is indicated. The reason vaginal Caesarian section is dangerous in these conditions is because in a placental insertion in the interior cervical segment, the tissues are extremely friable and tear widely when the uterus is pulled down. Should a case be admitted, after outside manipulation renders it likely that infection has taken place, the same treatment should be carried out as that applied to patients with well dilated cervix.

Tuberculosis and Menstruation (Cases of Dysmenorrhea and Amenorrhea Cured by Means of Karl Spengler's Tuberculin Treatment). (*Tuberkulose und Menstruation*). K. EISENSTEIN and J. HOLLÖS, Szeged. *Zentralblatt für Gynäkologie*, October 31, 1908.

The authors have previously published a small series of cases cured by this method. The present series is taken from 118 cases of women who were subjected to the tuberculin treatment. Fifty-three of the women with pain during menstruation were subjected to injection; of these, 40 were cured (watched 9-11 months). Of 27 cases who had dysmenorrhea from the onset of menstruation at puberty, 22 were treated and 16 were completely freed of pain. Of the cases mentioned 23 had physical signs of tuberculosis; in the rest it was occult, i. e., positive reaction to tuberculin. Fourteen cases of persistent amenorrhea were cured by injection.

The Spengler method consists of injections of tuberculosis vaccine, prepared from human and bovine types. If the human type produces reaction the bovine is used for injection and vice versa. Minimal doses are used at the start. For details the original article must be referred to. The authors believe that latent tuberculous foci are very common and that they must be regarded as a source for a constant pathological internal secretion causing lassitude, vertigo, anemia, disturbance of menstruation or amenorrhea. By favorably influencing the tuberculosis (whether latent or overt) the above symptoms are relieved or cured.

A Further Contribution to the Histo-Pathology of Paraffin Prosthesis. M. L. HEIDINGSFELD, Cincinnati. *Journal of the American Medical Association*, December 12, 1908.

Heidingsfeld gives an account of a case in which he had used paraffin injection for the relief of disfiguring scars left by chickenpox, with apparently excellent results, in 1904. More than three years later the patient presented herself with the scars again prominent and further disfigured by pigmentation and surrounded by a faint zone of mild inflammatory reaction. One of the lesions was extirpated and he gives the microscopic findings, which are in accord with those previously reported by him in two cases to the ninth congress of the Deutsche Dermatologische Gesellschaft in 1906. Besides the unsatisfactory results observed by him in these cases, there is the danger of embolism, and he reports a case in the practice of a Cincinnati physician, in which blindness of one eye was produced. Such cases, he says, are too frequent to require

special comment. In this connection he mentions the recent experiments of Emil Beck (*The Journal A. M. A.*, March 14, 1908, p. 868) with injections of bismuth in paraffin for the obliteration of fistulas, and thinks the excellent immediate results may prompt the use of paraffin in such conditions without due consideration of the possible later consequences. Heidingsfeld thinks that the use of sterile agar-agar under strict aseptic precautions would possibly be safer. He is not apparently inclined to accept Eckstein's view, that paraffin of high melting point remains unchanged in the tissues, and the consensus of present opinion, he says, is against this. In conclusion, he says: "From our present state of clinical and histologic knowledge, paraffin, when injected into the tissues, is attended with considerable danger of embolism and amaurosis. The paraffin is promptly removed by phagocytosis, becomes replaced with fibroconnective tissue, and excites no small degree of local inflammatory reaction. Its presence is an irritant and foreign to the tissues in which it is placed. It may cause pigmentary, as well as mechanical disfigurement. It often stimulates surrounding structures to epithelial proliferation and adenomatous change. Its presence excites successive invasions and degenerations of phagocytes and leucocytes, which, with the intermediate formation of giant cells and connective tissue, impart a characteristic pathology, in which the various foci of paraffin become surrounded with a granulomatous structure not histologically unlike that of an early stage of tuberculosis; later they become surrounded with a wall of dense fibroconnective tissue. The removal of the central portions of the unchanged or slightly changed paraffin with alcohol and xylol imparts to the pathology a characteristic Swiss cheese-like appearance. Complete fibrosis is the final goal." The article is illustrated.

Vessel Anastomosis by Means of Rubber Tubing. W. WARD, New York. *Medical Record*, October 17, 1908.

The author implanted a piece of rubber tubing, the lumen of which was coated with vaseline, between the divided ends of the aorta in two cats. In both instances the operation was easily performed and was followed by but very little shock. The femorals pulsated promptly and to all appearances both animals appeared well. The first cat died four days after operation from volvulus of the intestine, but the rubber tubing had healed nicely in situ; it was filled with a thrombus, the central part of which was canalized to an extent sufficient to supply the lower extremities with blood. The second cat recovered uneventfully and was killed three weeks later. The tube was completely thrombosed, but sufficient collateral circulation had been established. The success of these operations leads the author to believe that rubber tubing may be applicable in cases of emergency, when living tissue is not at hand.

Epidermalization of Granulating Surfaces with "Scharlach" Oil Ointment (*Zur Epithelisierung granulierender Flächen durch Scharlachrotsalbe*). C. KRAJCA, Köln. *Muenchener Medizinische Wochenschrift*, September 22, 1908.

The results at E. Martin's clinic have been encouraging. Epidermalization is increased in rapidity and the epithelial layer is stronger and thicker than that obtained from Thiersch grafts. In one instance Thiersch grafts were applied and four days later the scharlach oil ointment resumed. This treatment appeared to increase the strength of the grafts and gave them greater solidity. The ointment is prepared by dissolving "scharlach-rot" (Grübler, Leipzig) in chloroform oil; it is then rubbed in a mortar until all the chloroform has evaporated, and mixed with yellow vaselin to a 8 per cent. ointment. The ointment is applied on gauze and alternated with boric vaselin. If there is any dermatitis the ointment is not applied for one to two days.

A Brief Consideration of Post-operative Gas Distention of the Abdomen, with Suggestion for Prevention. FRITZ J. MOEUNIGHOFF, *Journal of the Missouri State Medical Association*, October, 1908.

The author says that any operation which requires any considerable amount of exposure to the air and coating of the intestines is productive of gas distention. The amount

of anesthetic, the length of anesthesia and the pre-operative and post-operative treatment, do not play such an important rôle. But manipulation and handling of the intestines invites gas distention. It is possible to reduce the number of cases of gas distention by keeping the intestines protected with sponges soaked in warm normal salt solution. The latest preventative measure is the employment of eserine salicylate, gr. 1/40, which has more effect in aseptic laparotomies. The expulsion of gas may have to be assisted by a glycerin enema. Dr. H. E. Pearse has had good results from the use of a 500 candle power leucodescent light. The expulsion of gas began almost immediately. He applies the light to the abdomen twice daily. He claims it prevents adhesions, promotes absorption and stimulates peristalsis.

Infections of the Knee-Joint and Their Treatment.

WALTER C. G. KIRCHNER. *Journal of the Missouri State Medical Association*, October, 1908.

The knee-joint is most often infected by penetration or injury in which bacteria are carried either directly into the joint cavity, or secondarily through extension of infection of, bursae or of tissue surrounding the joint. Injuries caused by nails, bullets, scratches or lacerations of the knee are most frequent. Contusions and compound fractures may also be causes of infection and the danger in the latter is very great. The ability to make an early correct diagnosis is of foremost importance. In acute infections the prognosis is exceedingly grave. The fever assumes a septic type, the pain is extreme while the pus is under pressure, which may be relieved, either by opening the cavity or by the extravasation of the pus into the surrounding tissue. If the pus does not drain properly, the synovial membrane is likely to be attacked and necrosis of bones and osteomyelitis may result.

In treating knee-joint infections it is most important to bear in mind the anatomical landmarks, for any one of the numerous bursae may become involved and become receptacles for virulent infectious material.

Exploratory puncture with a needle of large caliber may be advisable in establishing a diagnosis. If the patient is running a septic temperature or if the condition has been ushered in by a chill and fever, radical measures should be pursued to relieve the joint of further complications. Long incisions with through and through drainage may bring about a good result, but in some instances it is necessary to lay the knee-joint wide open with thorough drainage of all the bursae, accompanied by irrigation of the open surface. Ankylosis may result but in many cases a return to almost normal function is established.

The Treatment of Rectal Prolapse by a New and Simple Procedure. A. TIERLINCK. *The Proctologist*, September, 1908.

The author describes the Thiersch method which consists in circling the anus with silver wire so as to reduce the size of the opening and prevent the descent of the rectum. A silk thread can be employed to advantage instead of silver wire. The operation may be performed in the following manner: After the rectum has been thoroughly cleansed, the patient is placed in the lithotomy position and the region anesthetized by cocaine, eucaine or stovaine. A little incision is made through the skin in the middle line about one and one-half centimeters from the anus. A full curved needle, carrying the silver thread, is then passed through the skin, around the anus, and brought out through the point of entrance. The thread is then pulled out of the needle and put through a little ring at one end until the olive tip at the other end passes beyond it; the ring is then flattened, so that the olive cannot return, and the free end of the thread is severed near the olive. The small cutaneous wound is then closed by suture. Twelve patients were operated upon in this way with successful results.

Painful Displacement of the Ribs. A. DEPAGE, Brussels. *British Medical Journal*, October 3, 1908.

The author describes a series of cases in which the predominant symptom is pain in the side, usually on the right; all of the author's patients were women. The lesion is

very frequently mistaken for movable kidney; when the kidney is anchored, no relief is obtained. In some instances, even appendicectomies and ovariectomies have been performed. Upon examination, it is found that the eleventh rib and sometimes the tenth are unusually low down and override the crest of the ilium. Pressure upon these ribs causes intense pain. The pain is also brought on by walking. In many cases there is a greater or less degree of scoliosis. The author has seen 30 cases in the past four years. The best method of treatment is mechanotherapy and gymnastics. In four cases, the author had to resort to resection of the end of the rib in order to relieve the pain.

The Diagnosis and Treatment of Kidney Stone.

ARTHUR DEAN BEVAN. *St. Paul Medical Journal*, October, 1908.

The first operation for kidney stone was performed through the parenchyma by Henry Morris in 1880, who later reported thirty-four nephrolithotomies.

The diagnosis is based on a careful history of the character and duration of the attacks, the existence of pain which occurs in all cases and the presence of hematuria. Rarely large stones may be palpated through the abdominal wall or crepitus may be felt in the kidney pelvis. Urinary findings may include fragments of calculi, renal or ureteral epithelium and leucocytes. Vesical or rectal tenesmus is frequently felt when the stone lies in the lower ureter and the accompanying cystitis or ureteritis causes frequency of micturition. Ureteral catheterization and cystoscopy afford the most reliable tests at our command. Functional tests include the indigo-carmin test, the phenylhydrazine test and cryoscopy. The Roentgen examination will picture a stone in a majority of instances. Negative pictures are likely where the stones are of pure uric acid or urates, patients with thick abdominal walls, small calculi. Mistakes are likely where there are phleboliths in the pelvic veins, foreign bodies in the bowel, vagina or bladder, calcified appendices epiploicae or calcified tuberculous lymph nodes and calcified areas in the pelvic ligaments.

Post-Operative Hemorrhage from the Stomach and Intestines (*Postoperative Magen-Darmblutung speziell nach Appendicitis-Operationen*). GEORG SCHWALBACH, Berlin. *Deutsche Zeitschrift für Chirurgie*, November, 1908.

Reviewing the literature on post-operative gastro-intestinal hemorrhage and analyzing his own cases critically, Schwalbach comes to the following conclusions: Gastro-intestinal hemorrhage after operation for appendicitis is a rare complication in the adult, whereas it is seen quite often in children. More cases are recorded as occurring in the male adult than in the female. Thrombosis of arteries or veins in the mesentery and mesenterium is responsible for the lesions in stomach and gut. The pathological changes are hemorrhages, erosions and ulcerations. These can be reproduced experimentally in animals. In his own series of 30 cases, the author finds that 17 ended fatally—a very high mortality.

Hematogenous Infection of the Appendix and Gall-Bladder (*Ueber die Frage der hämatogenen Infektion bei Appendicitis und Cholecystitis*). CANON, Berlin. *Deutsche Zeitschrift für Chirurgie*, November, 1908.

Theoretically we ought to be able to recognize two kinds of inflammation of the appendix and gall-bladder, namely the enterogenous and the hematogenous varieties. The author believes that infection of the appendix by way of the blood stream, occurs more frequently than we are wont to suppose. The presence of bacteria in the blood and the facts pointing to the appendix as a *locus minoris resistentiae*, both speak in favor of his view, in a number of cases. Frequently the organism found in the appendix belongs to a type that is more usually met with elsewhere in the body, and is not one of the usual intestinal flora. Then there are the cases of complicated erysipelas, carbuncle and suppurating wounds which are easily explained on the hematogenous theory. From the practical standpoint, however, we can determine which form we are dealing with, only in the minority of cases.

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MOVABLE KIDNEY.

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A movable kidney is one which changes position behind the peritoneum. Since Landau, of Berlin, in 1879, first called attention to this abnormal condition, the questions of etiology, diagnosis and treatment have been of the keenest interest to all men engaged in surgical work.

Various degrees of mobility have been noted and classified by different observers, but there seem to be but two of any practical advantage—movable kidneys which develop definite symptoms, requiring treatment, and those which, though movable, produce no symptoms. There seems to be no definite connection between the degree of departure of the kidney from the normal position in the loin and the symptoms developed. A large degree of mobility producing at times no disturbance whatever, while a slight displacement may excite the most violent symptoms.

The kidney is supported in its position by a constant balance between the intra-abdominal pressure and the tension of the abdominal muscles, supplementing various suspensory devices. It, therefore, follows that any lax condition of the abdominal walls or elongation of the suspensory ligaments must predispose the kidney involved to dislocation. Moreover, the recess or trough in which the kidney lies varies in shape and depth. In the male it is deep and funnel-shaped; in the female shallow and more cylindrical. May not this help to explain the fact that 85 per cent. of cases of movable kidney occur in women? Again, the right kidney, with the liver superimposed, is slightly lower than the left, and is in intimate relation in its lower third with the posterior and extraperitoneal portion of the ascending colon. Through this contact with the colon a decided downward pull comes on the right kidney from the forced peristalsis of the loaded bowel during its constant effort to overcome the force of gravity in passing upward its fecal contents. It is, therefore, more than coincidence

that causes displacement of the right kidney fifteen times more frequent than that of the left.

We find movable kidneys more often in women of thirty to forty years of age, who have done hard physical work and have had many children. There are certain physical characteristics which play a very important part in predisposing to displacement of the kidney; namely, any physical abnormality which may tend to flatten and make shallow the normal paravertebral fossae. This explains the fact that palpable kidneys are found almost always in long-waisted, slender-bodied women.

Moreover, the transient hyperemia which occurs during menstruation loosens the kidneys' fascial attachments and may be a predisposing cause. Tight lacing cannot be an important contributing factor, as Samoan and Egyptian women who have never known corsets, present a large percentage of palpable kidneys.

Harris presents his conclusions as follows:

- 1.—The essential cause of movable kidney lies in a particular body shape.

- 2.—The chief characteristics of the body form are a marked contraction of the lower end of the middle zone of the body with a diminution of the capacity of this portion of the body cavity.

- 3.—The diminution of capacity depresses the kidney so that the constricted outlet of the zone comes above the center of the organ and all acts, such as coughing, straining, lifting, flexions of the body, etc., which tend to adduct the lower ribs, press on the upper pole of the kidney and carry it still further downward.

- 4.—It is the long-continued repetition, in a suitable body form, of these influences, which collectively may be called internal trauma, that gradually produces a movable kidney.

External trauma, violent muscular effort in a constrained position or during labor, are apt to result in a displacement of the kidneys.

Mrs. H., housewife, thirty-five, gives a history of administration, by midwife at last confinement, four years before, of considerable ergot to stimulate her pains, which were weak and ineffective. Pains became extremely forcible, so strong as to

alarm her attendant. During one of the most violent efforts she felt something "tear in her side." Soon after getting up from her confinement she consulted her physician, who found a movable kidney. She had a high fixation done by lumbar route, but displaced her kidney again during a miscarriage sixteen months after fixation.

The symptoms produced by a movable kidney vary a great deal. Your trainman may tell you that he cannot ride his train unless standing up, a sitting position while the train is in motion producing great pain in his back. His pain may, however, simulate gall-bladder trouble, or even an acute appendicitis; indeed, he may have the disease as a complication, caused by compression of the mesenteric vessels by the movable kidney. Edebohl states that 60 per cent. of movable kidney cases have more or less trouble with the appendix. I am inclined to believe that his estimate is very conservative.

Your maid of all work may be unable to complete her accustomed duties on account of severe colic, intense pain in her side, or an intractable cystitis. In short, the pain of a movable kidney, which may be colicky, burning or dragging, constant or intermittent, may be referred to almost any of the viscera. Patients suffering from a displaced kidney are usually subject to peculiar attacks—cramp-like seizures—called Dittl's crises. Such an attack is marked by sudden pain, increasing in severity, nausea, perhaps vomiting. There may be chills, with small pulse, collapse or a high temperature. The kidney is extremely sensitive, and if examined early in the attack may appear as a rounded tumor larger than normal. The abdominal tenderness and distension may be so excessive as to simulate peritonitis. The urine is always diminished in quantity. Hemaglobinuria, albuminuria, and oxaluria are common. Both hyaline and granular casts are not unusual, the urine at times presenting a perfect picture of acute nephritis. Pus is found at times; this, as well as the other urinary abnormalities, depending upon the degree and permanence of the interference with the blood supply. The attack passes off as suddenly as it began—sometimes after a few hours, more often only after days—its termination usually marked by a copious discharge of urine. This, however, is not what has been often called an hysterical urine, but the discharge of a hydronephrosis caused by a kinking and consequent obstruction of the ureter and renal vessels. The gradual increasing curvature and obstruction of the ureter has a marked effect upon the secreting force of the kidney, diminishing the secre-

tion as the obstruction progresses until in extreme cases atrophy or cystic degeneration of the kidney may result. (Hall: *Journal Obstetrics and Gynecology*, 1904.)

It is very probable that many of the so-called hematogenous kidneys—those kidneys infected with the colon bacillus, may have been originally movable kidneys. It is an established fact that the colon bacillus does enter the kidney through the renal artery and the conditions present in both intestinal and urinary tract in these cases of displaced kidneys are much more likely to promote rather than inhibit such an infection. In fact, I believe that the investigations of Dr. Brewer tend to prove that this does take place.

Our case histories show "conclusively that the attacks are by no means all of them hysterical, and that we are dealing with an acute disturbance which can be easily mistaken for a beginning appendicitis or for an acute inflammatory attack of the gall-bladder." (W. M. Conant; *Plea for Fixation of Kidney*.) Icterus may be a prominent symptom in these cases, caused by direct tension upon the duodenum or obstruction of the gall-ducts by pressure of the displaced kidney. This occasionally results in a cholecystitis which, after a time, may become chronic, and the development of calculi very probable. I had the pleasure of seeing just such a case some time ago come to operation. In this instance the train of symptoms extending over some five years showed a gradual development from what was unquestionably a simple movable kidney, through slight recurrent attacks of jaundice, gradually increasing in frequency and severity until the removal from the gall-bladder of a number of good-sized stones terminated the trouble. The position of the kidney at the time of operation, together with the testimony of the well-trained observers who had seen the patient early in her trouble, seemed to prove conclusively that the displaced kidney had been the most potent factor in the production of the gall-bladder mischief.

Tinkham (*Journal A. M. A.*, July, 1907) reports two cases of unmistakable gall-bladder trouble relieved by fixation of displaced kidneys which were pressing on the bile ducts.

Most sufferers from displaced kidney are subject to digestive troubles, depression of spirits, neurasthenia, or hysterical attacks. In fact, it is difficult at times to determine whether the movable kidney is a cause or a coincidence.

The abnormally located kidney is usually easily recognized by bimanual palpation. In thin subjects it is easily palpated, but may be found almost any-

where in the abdomen, its range limited only by the length of its pedicle. The pateroprone position, with the knees a little more extended than in Sims' position, will at times bring out a movable kidney which cannot be clearly defined with the patient on the back. A standing position, the weight of the body resting on the hands, the body slightly bending forward, is at times of decided advantage. If the patient, standing, will lean a little backwards, the body firmly supported, and bending a little toward the side to be examined, when a deep breath is taken, it is often possible to feel a slightly prolapsed kidney slip from between the examining fingers and thumb grasping the side below the ribs. As the kidney slips away from the hand, most patients will give an exclamation of surprise or pain, showing that they realize that the source of their trouble and the indefinite pain has been reached.

"A movable kidney may be confounded with an accessory hepatic lobe, with cysts of the liver and with gall-bladder enlargements. All tumors of the liver and gall-bladder share the respiratory mobility of these organs, whereas floating kidneys, except they have a long pedicle and a mesentery, have no respiratory mobility. The kidney is usually covered with the colon, which gives tympanic resonance, whereas the gall-bladder and liver lie close to the abdominal wall and the percussion note over them is dull. The most conclusive sign for differentiation lies in the ease with which a movable kidney can be replaced into the loin, which position it furthermore maintains when pressure on it is relaxed, whereas all other tumors and swellings cannot be fully pushed into the loin and on their relaxation at once come out again.

"Tumors of the stomach and colon cannot be fully replaced into the loin, and they afford other clinical evidences that enable us to readily differentiate them from movable kidneys." (Berg: Surgical Diagnosis).

In the Transactions of the American Surgical Association, Keen writes, referring to movable kidney: "The discomforts are very great and the pain may be so excessively severe and prolonged as to interfere with all occupation, and practically to make life almost unendurable. The disorder may pass beyond the realm of bearable evils into serious and actual danger to life itself, so that in considering the slight mortality from nephrorrhaphy, we must also bear in mind that there is a mortality attending the expectant treatment as well."

In the treatment of those cases not requiring active surgical interference, the use of mechanical pressure through pads can be mentioned only to be

condemned. These patients do best with a "straight front," long-waisted corset, or so-called belt, according to sex, snugly fitted. If a corset be used, one a size or two smaller than that usually worn gives the best results. These appliances should be adjusted while the patient is in the recumbent position, preferably in the morning before rising, the lower part fastened first and the abdomen pushed well up above the edge of the support.

It is not my purpose to discuss the different methods of kidney fixation which have been in use since Hahn did his first operation in 1881. I wish to say, however, that it is vital to the success of any operation that all of the lesions coexistent with that of the kidney should be investigated and taken care of. To anchor a prolapsed kidney and leave a diseased appendix or gall-bladder, or a lacerated perineum or cervix might be inviting failure.

Some years ago I was enabled through the courtesy of Dr. William M. Conant to see done and to study the operation for kidney fixation originated by him. The simplicity of the operation and its uniformly good and permanent results so appealed to me that I have recommended this procedure in all of my cases requiring operation. In none of the operations done by this method have I derived other than great satisfaction from its use. The incision is a slightly oblique one, starting a little above and behind the anterior superior spine and extending backwards and slightly upwards towards a point a little below the last rib. The incision is carried directly through skin and oblique muscles, cutting the transversalis fascia, if necessary, when blunt dissection very quickly exposes the kidney, the peritoneum being pushed aside, not incised until the operator wishes to explore the cavity of the abdomen proper. "No vessels of any account are divided. No nerves are cut because the incision should lie between the ilio-inguinal and ilio-hypogastric, thus doing away with paralysis of the rectus and other muscles, also doing away with bulging and areas of anesthesia." Another advantage, the operation is done with the patient on the back, avoiding a forced position of the patient and all the disagreeable troubles we so often get with the use of sand-bags and air cushions. "The operation done by this route is more quickly done than by lumbar incision, and as very little blood is lost, there is a lessening of shock. The possibility of mistake in diagnosis can be easily corrected. The kidney, the pelvis of the kidney and the ureter can be easily palpated, and the question whether there is or is not a stone in some part of the urinary tract can be easily determined. Furthermore, the possi-

bility of there being a mistake in diagnosis between movable kidney and gall-stone can also readily be determined by exploration. This is impossible by the lumbar route. As many of these cases in women have trouble at the same time with one or the other ovary, or a possible displacement of the uterus, it is well that the pelvis be gone over carefully." (W. M. Conant: A plea for the Anterior Abdominal Route for Fixation of the Kidney.)

Again, the most skilful operators often fail in attempting to remove a diseased appendix through the lumbar incision; through the incision just described it becomes a very simple matter. Taking into consideration the statistics of Edebohls before noted, it seems to me that any surgeon doing a fixation and neglecting to investigate the condition of the appendix may fall far short of his whole duty to his patient.

The kidney, having been thoroughly separated from its fatty capsule and any possible anterior adhesions, particularly to the colon, is fixed by two kangaroo tendon sutures at the lower part of its paravertebral recess, the lower pole resting just above the crest of the ilium, anchored to the strong fascia "which ties down the psoas and quadratus lumborum and can be felt as a strong ridge." (W. M. Conant.) The sutures are both placed in the lower half of the kidney, about an inch apart, through fibrous capsule into the parenchyma; the intra-abdominal pressure holding up the upper pole while the lower pole is firmly fixed upon its shelf. I can do no better than quote Dr. Conant's description of the mechanism of this result:

"The depth in which the kidney lies between the psoas on one side and the quadratus lumborum on the other side extends to the crest of the ilium, so that the kidney lies in a somewhat contracted trough, which becomes shallow as we get towards the crest. . . . For the purpose of rough demonstration, the position of the somewhat closed palm of the hand may be likened to the trough in which the kidney lies. The upper curve may be said to be the diaphragm; the lower part is the posterior portion of the crest. It will be noticed that if anything is placed in the palm of the hand with the hand in a horizontal position, and then tilt the hand towards the vertical, that the substance in the hand slips out, the lower portion first and the upper portion following. This would be still more true if we remember that the kidney is a little lower than the vessels which go off from it, and that the entrance of the vein and artery is largely in the upper half. The kidney, therefore, when it leaves

its position starts with the lower end foremost, in all probability, and tips over.

The upper portion probably never tips over first. . . . If then we place a shelf at the lower end, to continue our illustration, the hand can be brought into a vertical position, so in like manner the kidney can be forced into position without drag or pull. It simply rests on a shelf or pouch. This seems to me to be the sensible method of holding the kidney in position." (W. M. C., *ibid.*)

In the last few cases where I have done this operation I have split the fibrous capsule over practically the entire length of the kidney, the kidney tissue rolling out immediately on incision, showing the increased pressure in the parenchyma. The continued reports of good results of decapsulation in selected cases in which the conditions present were very similar to those found in Dittl's crises, and often between these attacks, led me to believe that a partial decapsulation or at least a splitting of the fibrous capsule would promote relief of the tension and congestion and thus hasten recovery. A series of experiments (upon dogs) satisfied me as to the correctness of my assumption, and I am of the opinion that in two cases at least the capsule splitting was of decided advantage. Moreover, the anastomoses of the small vessels in the thin line of granulation tissue with the vessels in the tissue about the kidney cannot help assisting in making permanent the relief of the congestion always present in these cases.

G. G., male, forty years, farmer, does a little lumbering; weight 180 pounds; always been active and healthy. September, 1898, consulted for pain in right side, persistent, dragging, colicky at times. Has suffered since some time in June, following fall on his side on a peeled log. Has constipation. Long standing or riding increases his pain. Seen first while suffering from an attack of pain, which had lasted then almost twenty-four hours. Abdomen slightly tympanitic, tender especially on right side near umbilicus, where a rounded tumor could be made out, which moved somewhat on pressure. Appendix, movable kidney and gall-bladder considered. Patient was quite yellow and gave a history of varying degrees of jaundice existing for about six weeks. His pain relieved and the attack subsiding, the misplaced kidney was easily made out. Operation was recommended and refused, and much to my surprise, after the use of a snug support for some two or three months, refraining from all violent exertion, with as much rest in the recumbent position as such an active man could be induced to take, his kidney became fixed low down and with the help of an abdominal bandage he gets along well. Since his enforced rest he has had no jaundice. He has no pain now, and with the ex-

ception of constipation is as healthy as he was before his accident. I imagine that the traumatism may have produced conditions which enabled nature to do a fixation herself.

Mrs. K., thirty years of age; two children. Labor five years ago, instrumental. Endometritis, constipation marked, family history negative; history of fall some six years previous; since then has suffered from more or less pain in back, which was attributed to slight dorso-lateral curvature, for which she is now wearing an apparatus with no apparent relief. Palpation shows movable kidney with great range of movement. Spinal brace discarded, but no relief resulting from use of supports for kidney, that organ was anchored by Conant's operation, a diseased appendix being removed at the same time. Recovery uneventful, patient in a few weeks helping about the house. When I last examined her, four years after the fixation, her kidney was in good position, and she was doing the major part of the work in a boarding-house. I am inclined to believe that in this case the dorsal curvature was a factor in lessening the depth of the paravertebral recess.

Mrs. L. H., housewife, thirty-five years of age; weight 120 pounds. One child, three years ago. Skin sallow, muddy; suffers from constipation; does not appear well nourished. Father died from some heart trouble very suddenly while she was in room with him; since this time has been very nervous. Is neurasthenic; has all sorts of symptoms—crises of pain, collapse—in fact, is practically bed-ridden. Has had two miscarriages in past three years; is suffering from lacerated perineum and endometritis. Right kidney prolapsed to level of umbilicus.

Operation.—Repair of cervix and perineum, with fixation by Conant's operation, with capsule splitting. Good recovery, in bed three weeks. Able to get about quite well, but hypochondriacal and afraid to move about much. Was confined about a year after fixation; labor uneventful. Kidney, six months after confinement, was in good position and apparently causing no symptoms. Patient still, however, markedly neurasthenic. Appendix removed in this case, as it showed diseased condition plainly.

Miss H., school teacher, 24 years of age; weight 110 pounds. Skin sallow; at times quite yellow. Troubled somewhat with insomnia; constipated most of the time. Has suffered for some years from attacks of violent abdominal pain, with tenderness in right iliac and lumbar regions. These attacks were usually accompanied by nausea and vomiting and a rise in temperature. Palpation showed a prolapsed kidney and, as the crises were increasing in severity and frequency, immediate operation was advised. Fixation by Conant's method; appendix removed. Uneventful recovery; out of bed in less than three weeks. Is at this time teaching school and rarely loses a day from illness. She still has at times some digestive disturbance, but her constipation has to a great extent been relieved; now has no jaundice.

Mrs. C., aged 28; has been confined to the bed by pain and general discomfort most of the time since her confinement (primipara), six months before. Gets about for a day or two, but cannot do anything about the house. Has movable right kidney, lacerated cervix and perineum.

Operation.—Repair of cervix and perineum, D. and C., fixation by Conant's method, with capsule splitting. Appendix removed. Out of bed before end of third week and for past three years, as far as I can learn, has been in excellent health.

Miss C. T., aged 28; weight 105 pounds; mill operative; anemic; nervous. Suffered for years from backache and abdominal pain, so extreme at times as to confine her to the bed for weeks. Attacks very irregular. Marked tenderness over McBurney's point; kidney below umbilicus. Operation by Conant's method. Capsule of kidney split, with marked rolling out of parenchyma on incision. Good recovery and still in good condition some two weeks ago. Operation, January, 1908.

Urinalyses were made in all of these cases, but unfortunately the individual data have been lost. My recollection is that transient albumin, with casts at times, was quite uniformly present.

All of these cases presented the same long-waisted, slender-bodied characteristic in greater or less degree, and all had the right kidney displaced. I have never seen but two cases of single left kidney displacement.

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POST-OPERATIVE ILEUS AND PURGATION.

Shock, exhaustion, evisceration, etc., are the customary contributing causes of ileus. In fact we know of no better prescription for the production of ileus than to cause excessive purgation before operation; to make an evisceration and a prolonged operation which includes some handling of the viscera, and finally to begin promptly to purge the patient after patient. Many crimes have been committed in the name of surgery, but to our thinking, the old plan of giving purgatives immediately after abdominal operations is the most infamous.—I. S. STONE in the *Virginia Medical Semi-Monthly*.

ON PULMONARY EMBOLISM AFTER INJECTIONS OF MERCURY—SALICYLATE SUSPENSIONS.

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The possibility of the occurrence of pulmonary embolism is the chief practical objection of importance that has been urged against the treatment of syphilis by the intramuscular injection of insoluble mercurials. If it were inevitable, even in a small proportion of cases it would be a legitimate objection to the method. But it is not inevitable; in fact, and I base my assertion on what is now a large and long experience with the method, it need never occur. We can tell when the needle is in one of the circulatory channels by observing its lumen after implantation and before injecting the fluid.

In a case reported by Eising in the January issue of the AMERICAN JOURNAL OF SURGERY an embolism occurred, though the precaution had been observed. As an advocate and exponent of the method I feel that some comment should be made. And perhaps I can best make it in the shape of some brief account of the practical points in making the test. Though minute; they are of importance; for neglect of any one of them robs the procedure of all value.

That there is a certain blood pressure in the veins, with the possible exception of those connected with the thoracic cavity, is admitted; and this pressure is quite sufficient to move the small and comparatively light column of mercurial suspension in the needle and show that the lumen of the instrument is in direct communication with the circulation. The following conditions, however, must be observed:

1.—The needle must be plunged into the tissues not empty, but thoroughly filled with injection fluid, so that when the syringe is disconnected the interior of the needle cap is filled with the suspension. Capillary attraction of the walls of the cap gives a concave surface to the visible end of the column of fluid. The least flattening of this concavity, not to speak of its slow bulging forward into a convexity, is proof of the existence of pressure at the needle point; and this can only be exerted by the blood in a vessel. It is the signal for immediate stoppage of the procedure at that point. It is not only unnecessary, but improper to wait until the

suspension in the needle has been forced out, and blood follows; and it is quite wrong to regard the appearance of blood in the proximal lumen of the needle as the criterion of the safety of the injection.

2.—The needle point must not be displaced whilst reapplying the syringe and making the injection. Hence the needle should be plunged hard into the tissues right up to the hilt, the shoulder of which should rest firmly against the skin; and hence also the connection between needle and syringe should be of the slip variety, permitting the ready and undisturbing reconnection of the instruments. If in the manipulation the needle is either withdrawn or plunged in a little, or even moved sideways, its point is displaced, and the safety test is lessened in value. Transfixion of veins by the needle plunged blindly into the tissues is necessarily of frequent occurrence, and is shown by oozing of blood after the needle is withdrawn. It is of no consequence at all, since the pierced veins are closed by the transfixing needle shaft whilst the injection is being made, and the tissues close up after the needle is withdrawn. A slight withdrawal of the needle, however, may place its point within a transfixed vessel, or it may be plunged into a new one.

3.—The lumen of the needle must be perfectly patent. If it is partially obstructed by an accumulation of the granular salicylate there may be sufficient resistance to the comparatively slight blood pressure to prevent any very apparent or rapid forward propulsion of the suspension. On the other hand the pressure exerted through the piston is very much greater, and may force the fluid through a partly obstructed needle. Hence the rules that I always insist on: the fluid in the cap must be watched very closely for at least half a minute before the safety of the implantation is decided on; the injection itself must be made very slowly and gently; and the procedure is to be stopped at once if there is the least obstruction to the easy and steady outflow of the suspension.

These points are minutiae of technic, of course, but they are important since the success and safety of the injections depend on them, and they should be observed in a method that is coming into extended and general use. Their non-observance may explain some failures, and answer some criticisms. The broader facts about these embolisms after the injections are of greater interest.

Personally I have never had an embolism occur; I have never even seen such a case. Though there are no figures at hand, I have certainly averaged over 1,000 injections a year for a number of years

past in my office. My assistants in various institutions have made a greater number; and the occurrence of embolism has been reported to me twice. It is quite possible that the technic was not perfect in these cases, since the injections are usually made by the newest and youngest members of the staff. I find that about once in thirty injections I enter a vessel, and have to withdraw the needle.

According to all reports, however, embolism, if it should occur, is not a serious accident. The patients have violent cough for a time, and perhaps some pain; but they recover entirely in a few hours or a day or two. A distinct reaction in the form of malaise, chills and fever, occurs sometimes; it is not due to embolism but to the introduction of a metallic substance into the body, and is analogous to the reaction after toxin injections.

I reserve for a forthcoming paper the consideration of certain other criticisms, suggestions and improvements of the method of administration of insoluble mercurials by injection. So far as pulmonary embolism is concerned, its occurrence can be avoided with as near an approach to certainty as anything in medicine, by the observance of the precautions detailed above. When it does occur there is reason to believe that some fault of technic has been committed. Even with a moderate amount of care it is very infrequent indeed. And when it does happen it is not of serious import. These are the conclusions reached regarding it by many others as well as by myself.

144 WEST FORTY-EIGHTH STREET.

DRUGS IN CHOLELITHIASIS.

Regarding the use of drugs in cholelithiasis, there are very few that can be administered with any degree of confidence that results are to be secured, save those indicated from a careful study of the gastro-intestinal tract (including the stools and gastric analysis), those that are indicated by a study of the circulation, and those that are indicated by a study of the blood.—JOHN H. MUSSER in *The Therapeutic Gazette*.

MAGNESIUM SULPHATE IN THE TREATMENT OF TETANUS.

By the use of magnesium sulphate subarachnoid injections it is possible to achieve complete muscular relaxation in almost all cases of tetanus; from the report of results there seems to be a distinct benefit to the patient in this condition in that it prevents the rapid exhaustion due to convulsions and in most instance it has been possible for the patient to take nourishment.—R. T. MILLER, *American Journal Medical Sciences*.

BORDERLINE CASES IN MEDICINE AND SURGERY.

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Because of their comparative infrequency, or on account of being sequential to interdependent diseases, certain affections offer obstacles to early recognition.

Reasonable delay in the diagnosis will not generally count against the successful treatment, even of a surgical affection, but this will not hold true in so urgent a disease as

ACUTE INFECTIVE OSTEOMYELITIS.

With the care taken in these days to promptly reach an accurate diagnosis, this disease will rarely be named articular rheumatism, nor acute tuberculosis, nor will dangerous delay occur in anticipation of an exanthematous fever, for the reason that the symptoms can scarcely be mistaken; and it is only on account of the danger of an exceptional oversight that it is here included.

The pain is especially severe. It is deep-seated and boring in character. So great is the suffering, as to be demoralizing to the patients; even their disposition and temperament are changed. The temperature is comparatively high, reaching 103 degrees and 104 degrees, with but slight recession in the morning; the elective points of disease being near the end of the long bones; but in the beginning, at least, it is unilateral, the swelling insignificant, yet deep pressure elicits the most lancinating and overwhelming pain, and moving of the limb aggravates the distress, which is so great as to be practically diagnostic.

The chronic type of osteomyelitis, particularly occurring in young children, is mentioned because of the danger of interpreting a moderate disablement as of rheumatic origin. Firm pressure over the bone, as, for instance, over the os calcis, will reveal sufficient definite tenderness to aid in an accurate diagnosis, and while in the acute type the earliest and most radical drainage of the medullary canal is necessary, first, for the preservation of life, and, secondly, for the conservation of the limb, yet in the chronic form, providing for drainage by means of multiple punctures with a bone drill usually leads to complete recovery.

LEAD COLIC.

Contact with lead colic in the industrial centers so fixes the clinical picture as to make this disease easily recognized, but in communities where occupation brings but few in contact with the metals, or where the handling of it is occasional, the develop-

ment depends more upon an idiosyncrasy, hence it is infrequent and recognition is not apt to be prompt.

It has been the experience of the writer to find lead colic, rather severe in type, in the editor of a weekly paper, who did his own typesetting, and what is more noteworthy, as having traced a case of lead colic in a clerk of a general country store to his habit of polishing stoves barehanded, and to have proved the diagnosis in the latter case by his immunity when wearing gloves.

Instances are recorded where surgical aid has been sought for its symptoms, so that this disease becomes potential even from a surgical point of view. The symptoms need not be recounted; they are classical—but in any case of doubt concerning the cause of abdominal distress, the possibility of metallurgic ileus should be weighed, every detail in the occupation and habits carefully considered.

PAL'S DISEASE.

Another, though opposite type of ileus, occurring usually in middle life, or in advanced years, is Pal's disease, or the disturbances incident to arteriosclerosis, involving the mesenteric vessels.

Even before Pal's complete discussion of vessel spasms, an abdominal form of angina pectoris was recognized and described; this gastric angina pectoris came on exactly as typical attacks do, save that the pain was distributed in the epigastrium, rather than toward the shoulders. These gastric attacks sometimes alternated with the typical precordial-shoulder seizures.

According to Pal's further investigations, the pain of certain forms of lead colic and the crises of locomotor ataxia are also due to the vasomotor contraction of arteriosclerotic vessels.

Pal also describes a form of abdominal crisis, in which neither of these physiological factors is to be found, and which occur in a basis of the ordinary arteriosclerosis. These sudden attacks of pain are found particularly in the upper abdomen, the appendix region, and in the center of the abdomen. (Plexus solaris). In some cases the entire abdomen is painful on pressure, without any definite point of tenderness. The characteristics of this condition are a sudden, severe pain, with localized paralysis of the peristalsis, with concomitant localized tympanites and constipation (paralytic ileus). The intestinal wall suffers in motility from impeded circulation until edema occurs, and, in severe cases, this can go on to thrombus formation and consequent gangrene. The diagnosis rests upon demonstration of an arteriosclerosis, and the increase of blood pressure during the painful attack. The diag-

nosis can be therapeutically proven by the relief of pain and diminution of blood pressure following the use of vasodilators.

PLEURAL EMPYEMA.

A disease which the general practitioner, particularly in the country or small settlement, does not have a fair opportunity to recognize is empyema, following pneumonia. With the resolution of the primary disease, the doctor is informed that it is unnecessary to call, although he is probably later notified that the case is gaining very slowly. This message is repeated, until finally the doctor has an opportunity to see the case, when there is little or no fever, and a comparatively small area of dullness may be regarded as imperfect resolution, whereas an opportunity more regularly to watch the case would have cleared the diagnosis. The value of the temperature reaction may be misleading in cases of long-standing suppuration, just as it may be misleading in the most acute infections of the peritoneum, in which the absence of temperature is not a guide to actual conditions. Not only following an irregular termination of pneumonia may empyema be suspected, but following a bronchial pneumonia of the exanthems, and traumatism of the chest, as well as pleurisy; and what particularly concerns the surgeon is empyema as a sequel to suppurative appendicitis.

Transferred infections occur in about five per cent. of such cases, the more common locations being the subphrenic space, the pleural cavity, and abscess of the liver. It should be a rule, therefore, to keep careful watch upon the chest in a suppurative case of appendicitis, where convalescence is tardy or the symptoms irregular, as early aspiration or drainage is necessary to forestall the dangers of this secondary surgical lesion in a patient unprepared for further suppurative disease.

MORTON'S DISEASE OF THE FOOT.

The only reason for referring to metatarsalgia is its comparative rarity, and the transferred pain often accompanying it. Frequently we have found the pain described as being most severe just below the knee. Sometimes it is referred to the hip, the distress in the foot being vague, and even experienced by the patient, until definite pressure is made over the metatarsal bone of the ring toe, when the patient himself realizes that this is the point from which the distress has been radiating, probably after having had a full course in massage, electricity and baths. Whether corrected by a modified shoe, supporting the transverse arch, or by excision of the head of the bone, is not germane in

this connection, as it is the recognition of the disease that we wish to emphasize.

APPENDICITIS IN CHILDREN.

Appendicitis in children offers difficulties in diagnosis, on account of lack of subjective response; from an imperfect history; from the obscuration of chest lesions, and from the early symptoms of infectious diseases. In the face of these difficulties, the fact that the walls of the appendix in children offer comparatively less resistance and that the omentum is immature, make far greater danger of peritoneal sepsis, and call for prompt surgical aid. There is less nausea, and vomiting occurs less frequently in appendicitis than in the gastro-enteric disturbances in childhood. Exceptions to this will occur in the stormy type of the disease. The related symptoms are more illuminating, and of these the position will often suggest inflammation of the right lower quadrant, the child will incline to the right side, with the leg flexed, and with the hand acting as a migratory guard over the affected area. Muscular resistance has less weight, clinically, than in adults, but tactfully and gently elicited it, strongly favors the diagnosis.

Inflammation in the chest cavity must be determined by a physical examination, and, if present, its muscular rigidity excluded. While it is true that hip joint disease may be regarded as coming within the differential class, we do not regard that with painstaking examination any doubts will remain on this point. Persistent vomiting, abdominal pain, temperature and pulse acceleration, leucocytosis, muscular resistance during the quiescent periods, and position in bed, with exclusion of chest lesions, will strongly point to the diagnosis of appendicitis in children.

ABSCESS OF THE BRAIN.

Cerebral abscess may develop insidiously, so remote is the history of middle ear disease; or so small may be considered the danger of infection through emissary veins, and so unobtrusive the early symptoms, that great danger may be done before the real condition is recognized.

Suppurative lesions, furthermore, may develop so slowly, become encapsulated and remain latent, following the slow process of erosion of the bone, with involvement of the meninges or venous channels, that the potential results of the infective agent may be observed.

Inflammatory extensions from the middle ear in order of frequency are (a) extradural abscess; (b) sinus thrombosis; (c) brain abscess; (d) purulent meningitis (Welty). Broadly speaking, symptoms

comparatively mild, yet of a cerebral type, require alert appreciation to secure the most favorable outcome.

Brain abscess in particular should be suspected, when there is persistent localized headache, irritability, insomnia, drowsiness, nausea; add to this a slow pulse, mental obscuration, disturbed vision, even with a low temperature range, the case may be regarded as having arrived at a surgical stage.

Following a classical course, the respective stages of (a) irritability; (b) pressure; (c) toxemia, will appear in brain abscess, yet the symptoms may develop so rapidly as to eliminate a picture so regular.

The elective period for operation is coincident with the early manifestations of pressure.

The history of rigor, while important, is not always properly interpreted as to certainty and degree by the patient, yet repeated rigors count for much in the history of infectious sinus thrombosis. The diagnosis of this condition is confirmed by wide and rapid oscillations in the temperature. In addition to dizziness, slight elevation in temperature and mental stammering, localized tenderness upon pressure above and behind the mastoid becomes a symptom of importance in extradural abscess.

The practical side is that when cerebral symptoms are complained of, the channels should be carefully examined through which infection could occur, and the clinical chart should minutely show all the symptoms at frequent intervals.

Awaiting the appearance of optic neuritis; of impaired reflexes, of local paralysis, and of convulsions, is to reach a stage where the chances for recovery are exceedingly forlorn.

FUNCTIONAL DISEASES.

No class of cases furnishes so large a number of near borderline cases in the aggregate examinations made by the surgeon as functional diseases, and it is from this same class that a large majority of the recruits are received by the scientists. They are especially migratory in their medical history. They have had many consultations, have studied their own case, and become expert in graphically reciting symptoms. Purely medical measures have failed; their dietary habits have been self-imposed; they have employed the latest fad cures, and they are apt to thrust themselves upon the surgeon or join the ranks of Christian Science.

If the functional disease relates to the digestive organs, the patient will speak of a posterior-no-loop gastro-enterostomy, and of a subsequent entero-enterostomy, and of duodenal ulcer with a familiarity that is surprising. Taken in full, their history

from a surgical standpoint is nebulous, but their implicit faith in being relieved by an operation becomes a menace against which the surgeon must carefully guard.

That many of them are cured by Christian Science treatment is a fact demonstrated many times in each community. That they may be relieved by surgical operation as a fetish is also true. But that neither of these have substantial reasons is the point we wish to emphasize, because such psychotherapy is incomplete, and does not take into account the need of work-cure for one, and rest-cure for another, nor the necessity for encouragement and actual education from the ripe clinician, who can weigh the individual factor as well as interpret the disease and its secondary effects.

Many cases of this kind have so long tampered with the digestive organs that it requires some time to redevelop a normal capacity for taking and assimilating a full share of blood-making, heat-producing nourishment.

The logical road to relief is through superalimentation, elimination, diversion, agreeable occupation; and the conviction that a physical salvation is attainable by measures less heroic than by a major surgical operation, more sensible than through the charm cures of Indian vendors, or the fetish of the faddist, and more reasonable than by the strangely mated vagaries of faith and health taught by the Scientists.

SURGICAL INDICATIONS FOR THE USE OF TINCTURE OF IODINE.

The indications for the use of tincture of iodine in surgical practice are numerous, and it is interesting to note that in 1880 Dr. H. P. Louthier, of St. Paul, called attention to this remedy. (Walsh's *Retrospect*, Vol. II, 1880, p. 534).

Besides the minor indications for tincture of iodine locally, as generally employed, its use in two important surgical conditions promises to give enduring witness to its efficiency.

First, in the treatment of tuberculosis of fascia, and secondly, in its application to that class of wounds, frequently of industrial origin, in which there is contusion and laceration of the soft parts with the opportunity for dirt and débris to be ground into the wound, as well as in *punctured* wounds, including, especially, wounds made by explosion.

In the first indication, however thorough may be the uncovering and excision of the tubercular fascia, there yet remains suspicious areas of tissue, undernourished and sodden, dipping between muscles, or covering tendons or large bloodvessels, which are beyond actual surgical removal, and it is over these

areas that we have been impressed and not disappointed with the great value of Churchill's tincture of iodine, locally applied.

It has been the custom of the author to use it, with results most gratifying, and while it has been used most freely, no bad effects have been noted other than mild iodine symptoms in a couple of cases. The results have been uniformly good, and we believe this practice will make for the difference between success and failure in severe cases. General constructive measures which bring up the vitality of the patient should always form a part of the routine treatment.

In the second indication, namely, in contused, lacerated and punctured wounds, we get not only the antiseptic value of iodine, but we have in this agent by far the best remedy to combat the *tetanus bacillus*.

After thoroughly cleansing such wounds, looking particularly for imbedded, foreign bodies after explosive injuries, the local use of iodine offers, indeed, the best measure of protection against this anerobic germ.

For many years it has been the practice of the writer to employ also the anti-tetanic serum at the time of primary dressing.

We believe the efficacy of tincture of iodine in the treatment of many minor, poisoned wounds, and its practically specific action in the two major ailments, tuberculosis of fascia, and tetanus, in the one curative, in the other preventive, warrants these recommendations for its further use.

TYPHOID PERFORATION.

An over-enthusiastic surgeon would many a time open a patient's abdomen were not the physician at hand to remind him that sudden pains in the course of typhoid fever are not unusual; that a leucocytosis of from 10,000 to 12,000 has occurred and the patient seemed none the worse; that the patient has vomited at times without appreciable cause; or, that in another instance, abdominal pain and fall of temperature were significant of intestinal hemorrhage and not of perforation.—R. H. HARTE in the *Boston Medical and Surgical Journal*.

MALIGNANT DEGENERATION IN GOITER.

In goiter under observation, if the gland begins to grow it should be promptly excised, because of the great possibility of its becoming a malignant growth. Many more thyroid glands should be removed just as benign tumors elsewhere are removed—to prevent the appearance of a malignant growth.—GEORGE W. CRILE, in *The Lancet-Clinic*.

A MODIFIED OPERATION FOR INGROW- ING TOE NAIL.

A. MONAE LESSER, M. D.,
Surgeon of the Red Cross Hospital,
NEW YORK CITY.

For the last ten years, the writer has performed a modified operation upon the toe nail with such excellent results that he has given up every other method for the one hereinafter described.

The operation differs from Cutting's in the retention of the skin flap, which favors quick recovery and gives better results than any other method known to me. The simplicity of the after-treatment also warrants the little extra work required for the operation.

Of course, there is but one kind of ingrowing nail which really requires surgical interference,

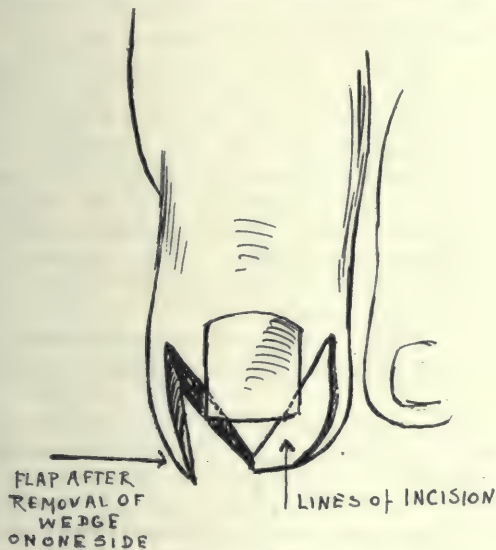


Figure 1. Technic of Operation.

and that is the case in which the fleshy parts at the side and often in front of the toe extend far beyond the downwardly curved distal margins of the nail. And for this condition the operation is as follows:

When general or local anesthesia is complete, the preparatory technic of asepsis perfected, and an Esmarch hemostatic band applied, make an incision on both sides of the toe by which the skin only is separated from the adjacent lateral tissue as far back as the lower third of the nail or further if necessary; lay back the flaps and hold them back with wet sterile saline gauze. (As the vitality of this portion of the body is low, the sterile saline pad is preferable to dry dressing). Next remove the tissue lateral to the nail. Begin the incision at the distal end of the toe about 10 m.m. under the lateral margin of the nail, and continue it in a

line obliquely outward to meet the point where the skin flaps are attached, taking care that the flap is not cut. The removed tissue is wedge-shaped, the base having been taken from the front of the toe and the point at the place where the skin flap ends. After all bleeding is stopped lay the flaps on each side under the nail, and suture them or hold them there with narrow strips of sterile adhesive plaster. Stretch a plaster strip about 2 c.m. back of the flap to the same distance on the other side around the front of the toe.

Should the nail have been septic before the operation place the strip of plaster low enough toward the plantar surface to allow the insertion of a small strip of iodoform gauze under the lateral margins of the detached nail; place the ends of the drain over the first layer of dressing. Use two layers of iodoform gauze dressing if the wound

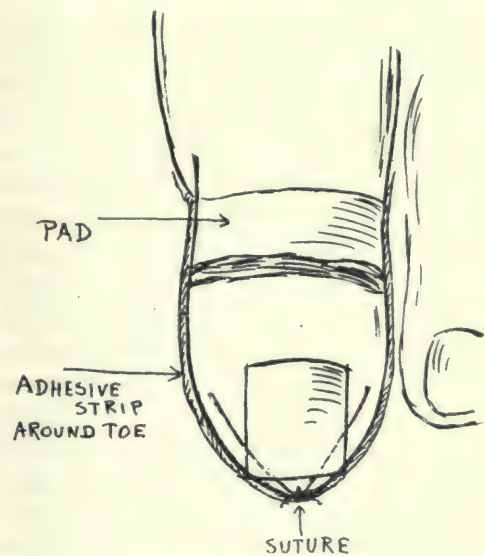


Figure 2. After Operation.

must be drained, the first under the ends of the drainage gauze and the second over everything (each layer to be three or four-ply). Cover all with a piece of gutta-percha tissue and tighten with adhesive plaster.

If the patient desires to go out after the third days, or even before, if very necessary, place to the base of the toe a pad of gauze which will stand higher than the dressing so as to form a protection against the pressure of the shoe upon the nail. Of course, this is only needed when the patient must go out. It will require from seven to nine days before perfect union has been completed, and even then it is advisable to protect the toe by plastering a four-ply layer of gauze across the base of the toe.

The advantages of this operation can be readily recognized by those who suffer all forms of annoyances at the first redressing after Cutting's opera-

tion, when the tissue including the skin is removed. I once witnessed such a procedure in which the patient suffered more pain and loss of blood at the redressing than he had before or during the operation—while when the skin is left and the operation performed under perfect asepsis the patient is free from pain. The shape of the toe becomes much better and what is more advantageous the meteor-esthesia of the cicatrix, which often follows the complete removal of the lateral tissue, is entirely prevented.

When the operation is performed with local analgesia, the pain caused by the insertion of the needle can be avoided by the employment of cata-phoresis of a solution of cocaine to which is added a proportion of adrenalin chlorid solution.

To induce analgesia, proceed in the following manner:

Fold a large towel (8-ply), wring it out of warm water and apply to the posterior broad part of the thigh, or the patient's back about the lumbar region, and over the moist pad place a piece of metal gauze to which the negative pole is attached; cover the metal gauze with a piece of rubber tissue or sheeting and strap the parts tightly. For the toe cut a piece of 8-ply gauze pad large enough to cover not only the parts to be cut, but from two to three c.m. beyond in every direction. The pad is saturated with the cocaine and adrenalin solution and laid upon the field of operation. Cover this with a soft layer of sheet platinum, 1 c.c. less in size than the pad. To this the positive pole of the galvanic battery is attached and the entire covered with rubber tissue or sheeting and strapped tightly to the toe.

Use about 10 or 15 milliamperes or even 20 for at least 18 minutes, although 15 will produce the effect. When the pads are removed the surface has a bleached appearance. The incision in the skin could be made without pain. It is better, however, to inject hypodermatically a sterile solution of cocaine hydrochlorate 0.75 per cent. with a 5 per cent. adrenalin before incising in order to insure absolute and perfect analgesia.

16 West Sixty-eighth street.

PARAFFIN PROSTHESIS.

From our present state of clinical and histologic knowledge, paraffin, when injected into the tissues, is attended with considerable danger of embolism and amaurosis. The paraffin is promptly removed by phagocytosis, becomes replaced with fibro connective tissue, and excites no small degree of local inflammatory reaction. — M. L. HEIDINGSFELD, *Journal of the American Medical Association*.

A CASE OF ACUTE MASTOIDITIS, COMPLICATED BY SIGMOID SINUS THROMBOSIS, EXTRADURAL ABSCESS, ENCEPHALITIS AND MENINGITIS —OPERATION—RECOVERY.

SEYMOUR OPPENHEIMER, MD.,
NEW YORK CITY.

A. A.—Female, aged twelve, was seen by me in consultation with Dr. H. L. Goodman on the afternoon of March 3d, 1908. For two weeks previously the child had had a slight cold, but felt well enough to be allowed to go to school. The mother noticed a slight discharge from the ear during this period. Two days prior to my examination the child complained of pain in the left ear, which became more pronounced during the day. The following day, the temperature varied between 102 and 103 degrees; pain in the ear less, with some discharge. Patient in bed and comfortable. During the night the child became irritable and complained of much pain. The day of my examination the child was very irritable and restless and complained of headache; discharge from the ear profuse; temperature 104 degrees.

At 10 A. M. the child had a pronounced chill and gradually sank into coma; at 11 A. M. she was completely unconscious. At 1 P. M. I first saw the child. Temperature 106.5 degrees. Patient comatose, the local condition presenting all the evidences of a marked acute mastoiditis, and the physical state indicating an intra cranial involvement. No convulsions had been noticed, slight generalized spasticity of the extremities, double Kernig and McEwen's signs present.

The patient was removed to the private pavilion of Mt. Sinai Hospital and immediately operated upon.

The usual curvilinear incision was made through the skin and periosteum over the mastoid process; the entire mastoid process was involved in an acute infection of a very severe type; the bone was of a greenish yellow hue; cells infiltrated with a thick greenish fluid. Culture showed streptococci.

The entire mastoid process was rapidly removed, the extensively necrosed tip being removed en masse; the sigmoid sinus plate was found necrotic; its removal exposing the sinus wall. The vessel was contracted and firm and appeared thrombosed.

The mastoid emissary vein was exposed and traced to its ending in the sinus; it also was thrombosed, standing out in sharp relief with its thickened walls.

On removing the cells over the mastoid antrum, a fistulous tract was seen through its roof, through which pus escaped. This opening was enlarged and about two drachms of greenish pus under great tension was liberated. The dura was then further exposed by extending the skin incision anteriorly over the ear and removing a large plate of bone over the squama of the temporal bone, including the antral and tympanic tegmen.

The dura was then seen to be markedly congested and blueish black, bulging pronouncedly. The dura was freely incised, the presenting brain was much

congested and showed over a large area a mushy friable appearance, with exudation. The pia-arachnoid was greatly congested. Fresh adhesions between pia-arachnoid and dura were bluntly separated and a gauze drain inserted into the sub-dural space. The brain was pulsating, bulging and markedly softened. The vertical limb of the sigmoid sinus was then compressed above and below in the site of its exposure and incised. A fresh reddish-brown clot presented immediately, after which there was an escape of blood. Free hemorrhage was established from the distal and proximal ends of the vessel. Blood culture showed four colonies of streptococci to each cubic ccm.; polymorphonuclear count 90 %; white blood count 31,000.

March 4th, day after operation, patient in a state of wild delirium; temperature 104 degrees. Lumbar puncture practiced for the relief of intra-cranial pressure; cerebro-spinal fluid under great tension and cloudy but bacteriologically negative. Polynuclear 75 per cent., mononuclear 25 per cent. Albumen increased.

Prior to the receipt of the laboratory report of the cerebro-spinal fluid anti-streptococci serum was injected into the spinal canal.

March 7th temperature 106 degrees. Patient still delirious, cannot be aroused excepting with difficulty; lumbar puncture, fluid clear, but still under great pressure. Blood culture now sterile.

March 8th, temperature 103 degrees. For the first time patient is somewhat rational. Blotchy erythema present, but quickly disappearing, leaving large areas of localized edema in its wake.

March 9th, temperature 101 degrees. Decrease of leucocytosis and polymorphonuclear count. Mental condition better, large protrusion of necrotic brain substance through dura; some indefinite symptoms of aphasia present. Exact character impossible to determine owing to the general restlessness of the child.

No attempt was made to cut away any of the necrotic brain tissue, as it was feared further injury might be done to some of the brain centers. Sub-dural drainage discontinued. Large quantity of cerebro-spinal fluid has been steadily escaping.

March 12th, temperature near normal. Dressing of wound followed by a giant urticarial rash, quickly disappearing; also edema of eyelids, lips and vulva, which persisted for some hours. General condition good, but child extremely irritable.

March 15th to 18th. General condition steadily improving. Definite evidences of optic aphasia present, which, however, appeared to be transitory; eye grounds negative.

Examination of aphasia, four objects being used—a pencil, a penny, knife and watch.

Recognizes objects *seen* and can indicate their use by appropriate motion.

Does not recognize objects *felt*.

Recognizes *taste* and *smell*.

Cannot name objects *seen*.

Cannot name objects *felt*.

Understands speech perfectly.

Does not understand printed and written words.

Cannot read aloud printed or written words and does not seem to understand the printed or written words.

Can write the name of objects seen, but only when their names are told to her (*i. e.* can only write at dictation).

Can copy perfectly.

Power to speak voluntarily is fair, words being occasionally jumbled or transposed. Can state all her wants very well.

Repeats words perfectly.

Night of March 18th. Patient became extremely irritable and rapidly sank into a stuporous state. Temperature rose sharply to 104 degrees. Polynuclear count 84 per cent. lumbar puncture immediately practised. Large quantity of turbid fluid withdrawn under great pressure. Smears and culture of fluid negative. Polymorphonuclear 5 per cent., mononuclear 95 per cent.

March 19th, temperature 105 degrees. Condition unchanged. Patient very noisy and unmanageable.

March 20th and 21st, Temperature down to 101 degrees. General condition markedly improved, although another rise to 104 degrees followed on the 23d.

The condition of the past five days is attributed to the local encephalitis rather than to a general cerebral process, which contention is justified by the pronouncedly apparent change for the better in the child's general mental and physical state which subsequently took place.

April 1st. Condition has gradually improved. Temperature normal. Much difficulty was encountered in managing the hernia cerebri, which, however, was by systematic and gradually increased pressure forced back into the cranial cavity. Aphasia gradually improving.

April 20th. Aphasia now only limited to a loss of ability to remember names of certain objects and loss of the retentiveness of memory.

Improvement from this time on was uninterrupted, and while it was thoroughly realized throughout the course of the illness that a developing encephalitis might at any moment defeat all our surgical efforts, yet much gratification was felt at the outcome of a case which can only be described as moribund at the time of the primary operation.

In conclusion I want to express my appreciation of the assistance given me by the general bacteriological investigations made under the direction of Dr. E. Libman, at the Mt. Sinai Hospital laboratory.

FRACTURE OF THE SKULL.

It should always be borne in mind that in fracture of the skull with depression of bone the symptoms may be due to laceration of brain substance and not to pressure effects. This would explain why in some cases operation gives immediate relief and in others relief comes slowly if at all.—H. STUART MACLEAN in *The Virginia Medical Semi-Monthly*.

SUBMUCOUS RESECTION OF THE NASAL SEPTUM; NEED OF MORE CONSERVATISM IN SELECTION OF CASES. TECHNIC OF OPERATION.

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Assistant Surgeon, Manhattan Eye, Ear and Throat Hospital,

NEW YORK CITY.

Now that the submucous resection has come to be recognized as the best method for correcting deformities of the nasal septum, there is a tendency among many rhinologists to perform this operation for almost, if not all, the bony and cartilaginous abnormalities. It seems to the writer that it is high time to urge the necessity of carefully considering each case before subjecting the patient to a fairly long and tedious operation, necessarily attended by considerable shock. Surely the old-fashioned spur operation, performed with an ordinary nasal saw, still has a place in intranasal surgery. This latter operation takes but a short time—at most four or five minutes—and does not require packing to prevent hemorrhage, provided the patient is kept quiet and under observation. In many instances it is possible to preserve the integrity of the mucous membrane by making a muco-periosteal or muco-perichondrial flap under which the spur is sawed off in the usual way. This is a surgical procedure which gives the patient relief and at the same time spares him a far more severe operation.

The possibility of obtaining too much space within the nasal cavities is another and even more important reason for not performing the submucous resection in many cases. The nose of a normal healthy human being does not possess two wide open gaping air passages. The principal air channels are the two inferior meatuses, and these are normally narrow. In many patients suffering from nasal obstruction, in one or the other nostril, the removal of the entire bony and cartilaginous portions of the septum is frequently followed by entirely too much nasal breathing space. The result is a dry nose, accumulation of nasal secretion, and a dry pharynx—in other words, naso-pharyngitis, with its accompanying ill effects upon the Eustachian tube and middle ear.

Therefore it is well to consider carefully each case of septal deformity. If adequate relief can be afforded by a spur or submucous spur operation, it is best to be satisfied with this comparatively simple surgical procedure. If the septal deformity cannot be corrected in this way, then the submucous resection, removing the entire deformity, if necessary, taking away the entire bony-cartilaginous

plate as far back as the posterior edge of the vomer, can be done.

It should also be remembered that in children, before the nose has attained its full size, extensive removal of the septal plate cannot be undertaken without subsequent deformity in adult life. We must either wait or, if the nasal obstruction is severe enough to make immediate relief imperative, we may try one of the modifications of the Asch operation.

There are certain preliminary measures which should be carried out before the submucous operation is performed. For instance, hypertrophied turbinate bones which press against the septum, perhaps bulging into a concavity, are to be corrected; the enlarged middle turbinate may be partially removed or the inferior turbinate may be reduced by linear cauterization or operation in order to allow the septal flaps, after operation, to lie exactly in the median line. If one of the turbinates is bound to

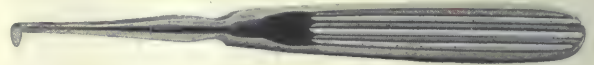


Figure 1.

the septum by adhesions, it is best to defer disturbing these adhesions until the flaps are separated at the time of the submucous resection.

The Operation.—The submucous operation is so well known that I shall merely describe briefly the method which I employ and indicate concisely the points which I have found especially helpful.

The operation is performed most conveniently with the patient in the sitting position. Success depends upon the degree of completeness with which the nose is anesthetized. I use pledgets of cotton saturated with 10 per cent. cocain solution, to which is added a few drops of 1/1000 adrenalin. These pledges after the excess of cocain is wiped off on a towel—are applied in long strips to both sides of the septum, where they are allowed to remain about twenty minutes. During this time the patient should be directed to hold his head well forward between the knees, to prevent the possibility of poisoning from cocain trickling down into the throat through the posterior nares. The strips are then removed and any parts of the septum which are difficult to reach are gone over with powdered cocain on a cotton applicator. Care must be taken that none of the powder is left in the nose.

The incision is made on the convex side, far enough back to save the columnar cartilage, as well as a narrow strip of cartilage to furnish support to the tip of the nose. The cut is a vertical one, beginning high up on the septum, and divides the

soft parts down to the cartilage. It should be extended down upon the floor of the nose and as far cut as the external wall. In this way we obtain flaps which balloon out and facilitate the subsequent steps of the operation. The rectangular knife shown in Figure 1 is used.

The flap, composed of mucous membrane, perichondrium, and periosteum, is now separated from the septal plate on its convex side with Freer's elevators (Figure 2). It is best to begin the separation with the sharp elevator and then to substitute the blunt instrument. We must be sure that the mucous membrane is not separated from the perichondrium by false dissection. This can be avoided by passing the elevator well under the perichon-

freely separated well past the deviation, it is best to begin the removal of the septal plate by taking out a window-shaped piece of cartilage with the swivel knife (Figure 3). There is danger of tearing the mucous membrane if the edge of the flap catches in the swivel blade. This can easily be avoided by assuring oneself with good illumination that nothing but cartilage is embraced by the knife. The upper portion of the bony septum, where it is extremely thin, is removed with the flat septal forceps shown in Figure 4, while Jansen's cutting forceps is by far the best instrument for the thick bone. The latter instrument, which is very powerful, is particularly good for removing the nasal spine.



Figure 2.

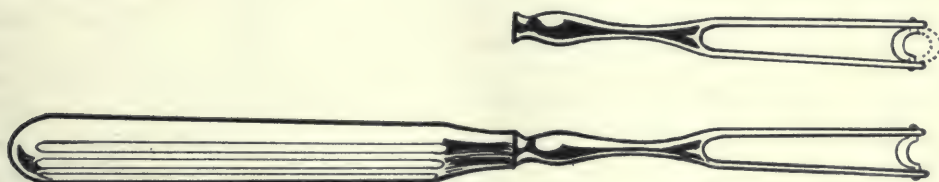


Figure 3.

drium and then making certain that the two are elevated in one layer. One flap must be dissected well away from the nasal spine, as a successful result depends upon plenty of room along the floor of the nose. The operator may use almost any nasal speculum, although occasionally a speculum with long blades like Killian's will be found useful to hold back the flaps. When the flap on the convex side has been separated well beyond the deflection, the cartilage is perforated at the site of the initial incision in the mucosa with a small narrow-bladed scalpel. This is the point where one is most likely to cut through the mucous membrane on the opposite side, therefore care must be exercised to avoid this accident which means a permanent defect in the septum. Most operators use a small sharp spoon curette to go through the cartilage, though in my hands the knife is the better instrument.

The next step is the elevation of the flap on the opposite or concave side, which is carried out through the incision already made in the cartilage. Here again I wish to emphasize the importance of dissecting the flap well away from the base of the septum and floor of the nose. When both flaps are

In regard to the amount of septum which should be excised, my rule is to remove all of the deviated portions, if necessary taking out the entire septal plate except a narrow strip of cartilage just under the bridge and a narrow vertical piece in front adjoining the columnar cartilage. These two strips, together with the columnar cartilage, are essential to furnish support to the nose.

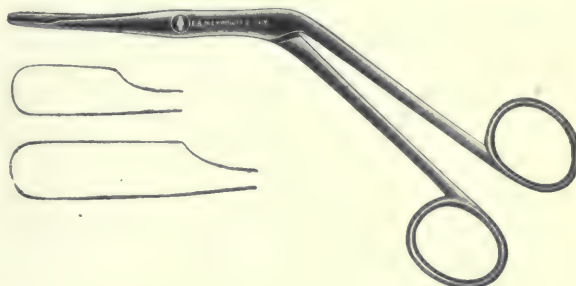


Figure 4.

At the close of the operation, after assuring oneself that no fragments of bone or cartilage remain between the flaps, both nostrils are packed to bring the flaps into apposition. The best packing is vase-

lin gauze, which is inserted in long strips one above the other. I now pack both sides, for I have found that severe hemorrhage will sometimes occur if only one side is packed. At the end of 48 hours the dressing is removed.

The after treatment consists in simply keeping the nose clean.

TWO ATYPICAL CASES OF SINUS THROMBOSIS.*

S. J. KOPETZKY, M.D.,

NEW YORK CITY.

CASE I.—C. W., aged 43, appeared at the Manhattan Eye and Ear Hospital on October 8, 1907, giving a history of having a discharging ear, which had persisted for one year; having been caused by a severe "cold." The examination showed a perforation of large size, marginally situated, through which a moderate amount of purulent discharge came away. The patient was put upon rational cleansing treatment, and seemed to improve as time went on. On March 20, 1908, he appeared at the Clinic with a swelling over the mastoid process of the left side, stating that this swelling had appeared two days previously. He had no pain and no fever or chills, and had passed a comfortable night. The swelling extended well over the temporal and parietal regions and forward as far as the outer angle of the eye. The external auditory canal showed edematous infiltrate.

Believing that I was dealing with an acute exacerbation of his chronic otitis media, I suggested operation and immediately sent him to the ward for preparation, and within a half hour the operation was performed.

Status on admission: temperature, 100.2; respiration, 20, pulse, 80.

Operative Findings.—The usual post-auricular incision demonstrated no pus from the swollen edematous tissue over the mastoid process. This was the first intimation that I had that I might be dealing with some sinus trouble, as previous observation on sinus cases had shown this finding in sinus involvement. This swelling should not be confused with the edema which results from a phlebitis of the mastoid emissary vein. (*Annals of Otology*, March, 1908.) The removal of the cortex showed the mastoid epiphysis filled with fluid pus. The cortex overlying the antrum was rather thick. The mastoid cells extended backward and upward rather unusually far and were found filled with necrotic debris and pus. The sinus took a course rather far forward and almost bisected in a diagonal direction the mastoid process, cells being evident both above and below it. The sinus wall was covered with necrotic granulations and its exposure for considerable distance failed to show a healthy wall. The sinus was then opened at the level of the antrum and found to contain a dark firm clot. The

sinus was now traced backwards toward the torcular for about an inch and a half, being opened all along its route, and free bleeding was obtained about one and one-half inches back from the knee. Working downward toward the bulb the central end of the clot was not reachable, therefore, after temporarily packing the mastoid cavity, re-sterilizing our hands and instruments, the neck was prepared for re-section of the jugular.

The operation on the jugular was easily performed, the internal jugular resected from just above the clavicle to above the facial vein. The clot was now removed from the bulbar end of the sigmoid sinus and free bleeding followed, probably from the petrosal. Both wounds were cleansed, mastoid wound packed in the usual manner and the lips of the neck wound approximated and ligated with three sutures, each having one surgical knot, leaving *in situ* a strip of iodoform gauze to act as a drain. The neck wound rapidly healed, the mastoid wound took the usual course and healed, the middle ear became dry without further incident. Patient eventually discharged cured.

This case is presented to demonstrate how extensive an involvement of the sinus may be present without giving the usual up and down temperature or any other signs to point to the gravity of the patient's condition. Here is a man who walks into the Clinic with a clot in his lateral sinus at least three to three and a half inches in length. Secondly, the only physical sign was an edematous condition over the mastoid region and extending well beyond it.

To point the lesson of this case more thoroughly, I present case two.

CASE II.—B. S., aged 6, came under observation June 10th, 1908, at the Ear Clinic of the N. Y. Throat, Nose and Lung Hospital, giving a history of having had scarlet fever two years previously, from which he recovered with a persistent purulent otorrhoea from the right ear. At the time of his appearance at the Clinic the right ear was profusely discharging a foul smelling thick creamy pus. The left ear was examined and found normal. Cleansing, antiseptic treatment was instituted and this was continued until June 15th, when the mother reported that he had vomited during the previous day; had passed a restless night; had some temperature, and complained of pain in the right ear. During the examination he vomited excessively and seemed a very sick child. Temperature 101.6, pulse 120, respiration 26.

I sent him to the Red Cross Hospital for observation, because the local condition in his ear, the absence of any mastoid tenderness on either side and the free discharge of the pus did not seem to me to be the cause of his illness. On the other hand, a thorough physical examination by the attending physician of the hospital, Dr. L. K. Neff, gave negative results. He was kept under observation until June 18th, when because of a beginning swelling

* Read before the Section on Otology (N. Y. Academy of Medicine), October 9, 1908.

radical operation was performed. His condition being summed up as an acute exacerbation of his chronic otitis media on the right side.

Operative Findings.—The retraction of the soft parts after the usual mastoid incision showed a well developed mastoid outline, cortical land marks well defined. The mastoid process was found partly eburnated, but there were well marked cells radiating about the tympanic cavity and mastoid antrum. These cells were filled with fluid pus and with pseudo-cholesteatomatous masses. An exposure of the sigmoid portion of the lateral sinus was effected at its knee for about $\frac{1}{4}$ -inch square. The wall was found to be healthy. The usual technical procedure to take down the post-auricular wall, eviscerate abnormal mastoid and tympanic contents, and cut a Panse flap with primary suture of the post auricular wound, then followed.

It is to be noted in passing, that the mastoid process presented no deviations from the normal process of a child, six years of age.

The day following the operation we find the temperature normal, pulse 74, respiration 22. Removal of the outside dressing showed the wound to look healthy. On the night of the second day, the temperature was still normal but the pulse rose to 102, respiration to 26. The child was slightly restless during his sleep, although nothing of an unusual character was observed; occasionally the patient complained of pain in the ear which had been operated upon. On the morning of the third day after operation the patient was sitting up in bed crying that he was hungry, presenting normal temperature, pulse 104, respiration 24. At 8.30 that morning he had vomited after having taken some gruel. Towards evening he became very restless, had a crying spell and in a seeming frenzy had torn off his bandages, nevertheless at 11.30 that night he was sleeping and the evening condition showed temperature 101.2 degrees, pulse 122, respiration 20. The nurse reported a slight attack of what she termed "delirium" earlier in the evening. On the morning of the fourth day, I found the patient lying on his back perfectly relaxed and unconscious. Temperature 102 degrees, pulse 132, respiration 22. His condition alternated between periods of unconsciousness and periods of crying. There was no Koenig sign, no opisthotonus. The dressings were removed, the stitches taken from the wound and the entire cavity inspected. The wound was found clean with no signs of pus. Thinking that there might be some local condition in the meninges or in the sinus (although there were no symptoms to justify such a diagnosis) a few whiffs of chloroform were administered and the tegmen removed exposing the meninges and the bony sinus wall was also removed to expose the sinus. Both were found healthy in appearance and further efforts were temporarily stopped. The child died that afternoon. Tentatively a diagnosis of rupture of a brain abscess was made. Permission for a partial autopsy was obtained and this showed the meninges normal, no increase in cerebral fluid; sections of the brain

failed to reveal any brain abscess and showed nothing characteristic although many small punctate hemorrhages were noticeable throughout its substance. The wound in the mastoid showed that it had been completely exenterated and an examination of the labyrinth was negative. The sinus on the right side was found normal. In the removal of the brain, the meninges of the opposite temporal bone were left *in situ* and as a last resort while looking for the cause of death, this was pulled from the cerebral surface of the temporal pyramid. In doing this the left sinus was uncovered and torn and we were surprised to find within it a yellow semi-liquid mass. The skin over the left mastoid was then retracted, its cortex exposed, and realizing then that I was dealing with a thrombosis of the lateral sinus on the left side of the head I endeavored to open the left mastoid. The first stroke of the chisel showed the sinus covered only by a thin cortex and further efforts were stopped until we had extracted the temporal bone. How far toward the torcular the clot extended we could not make out, as part of the mass was lost in the debris following the removal of the brain. It completely filled the sinus from the knee to the bulb and beyond. The thrombus was partly organized and of yellow color and from its macroscopical aspect was pronounced by the pathologist, Dr. Gonzales, a fatty degeneration of the thrombus. He estimated that it had been *in situ* for at least a week or ten days. The specimen showed the middle ear filled with pus and detritus, the antrum small, and no other cells evident at all. The sigmoid sinus was directly under the cortex and took up the entire, partly rudimentary mastoid tip. There was no evidence of real mastoid cells, if we leave out of account the small space directly under the mastoid fossa, and at the angle formed by the two sides of the petrosal pyramid. The contrast of this side to that upon which I operated is very marked, aside from the other peculiarities of this case.

Here, then, was a case in which a thrombus developed during an acute invasion of both ears, in which marked pyemic symptoms were absent. On the right side because of its previous history and local findings and because of the pain, an operation was undertaken, the left side because of congenital maldevelopment, and resulting anatomical peculiarities permitted pus to travel direct from the tympanic cavity to the sinus which was in almost juxtaposition, and a thrombus was thus engendered. This thrombus was evidently not a very infectious variety and became organized, and then, either because of the trauma to the head during the operation on the opposite side or because of some other extraneous factor it underwent fatty degeneration and from the dissemination of this fatty material the patient succumbed. The marked symptoms on the right side marked the graver condition on the left side.

At no time during the patient's illness was there any complaint of pain in the left ear and even at the time the right ear was bandaged the patient seemed easily to hear ordinary conversational tones with his left ear up to the very time that he became unconscious. There seems to be a need for an analytical study of all the atypical cases of sinus thrombosis in order that some data of diagnostic value may be accumulated.

616 MADISON AVENUE, NEW YORK.

THE DIAGNOSIS OF EXTRA-UTERINE PREGNANCY, AND A REPORT OF A CASE OF PRIMARY OVARIAN PREGNANCY.

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It is not my intention this evening to deal with the etiology or gross pathology of the question of extra-uterine fetation, but rather to approach the problem of the diagnosis along the path built by laboratory methods. Some years ago I had forcibly brought home to me the value of the routine examination of uterine scrapings in all conditions demanding curettment, since then, when, in conjunction with Dr. Charles Bentz and later my brother, Dr. Norman K. MacLeod, I have given the laboratory diagnosis of uterine conditions a very careful consideration, and we have investigated all these cases not only morphologically, but also bacteriologically, with the result that several most interesting diagnoses have been arrived at, among these, two cases of ectopic gestation, of which one is, from its rarity, peculiarly important.

In the consideration of the subject under discussion, I may be permitted to briefly define those positions, where the fertilized ovum may be arrested, and where placental gestation begins. These positions are of importance from the fact that the final resting place of the fetus, after rupture of its sac, is greatly dependent upon its primary position. First, primary interstitial pregnancy; second, primary tubal pregnancy; third, primary, ovarian pregnancy. Of these primary forms the tubal is comparatively common, the interstitial is met with occasionally, and the ovarian is an extremely rare condition, in fact, so rare that in looking over the literature, I am able to find the reports of but six cases. The primary forms may develop into secondary ones through rupture of the sac, and then are known according to their new location. The differentiation between the classes is practically impossible before the abdomen is opened.

The diagnosis in a classic case of extra-uterine pregnancy is comparatively simple, but it is seldom that the physician or surgeon sees the patient until the classic features are lost. The signs and symptoms are usually covered by those of an extensive intra-abdominal hemorrhage, and the surgeon is called upon to open the abdomen and perform a life-saving operation. Early in the history of the case the signs and symptoms are those of a normal intra-uterine pregnancy, namely, cessation of menstruation, fulness of the breasts, violet discoloration of the vaginal mucous membrane and morning sickness. As the case proceeds there is pelvic pain and the appearance of an enlarging tumor to one or other side of the uterus. As this tumor grows, the uterus is pushed over to the opposite side of the pelvis, and finally becomes fixed in its abnormal position. The pelvic pain is more or less constant, and is liable to have acute or subacute exacerbations from time to time. There may be little or no alterations in the pulse or temperature. If the fetus continues to live, these signs remain, become more marked, and the fetus may go on to full term. Usually, however, the condition is aborted, the sac is ruptured, hemorrhage takes place and the fetus dies. On the occurrence of this there is a casting off by the uterus of a membrane; this membrane may be passed as a complete cast of the uterine cavity with openings corresponding to the positions of the fallopian tubes and the os uteri, or it may be passed in pieces or shreds. The casting off of this membrane is accompanied by a blood-stained discharge, which may be very copious and which may continue for an indefinite period of time. The intra-abdominal hemorrhage may vary from an insignificant to a very extensive one, in fact, so extensive that the patient dies. If it be small, it may be practically overlooked as such and regarded as an attack of colic. Following a hemorrhage we may have temperature and pulse alterations, which may be due first to shock, second to absorption of fibrin ferment, and third to an infection of the clot.

In dealing with the question of the differential diagnosis, I will divide it into two classes. First, the clinical differential diagnosis; second, the differential diagnosis by means of laboratory findings. In the clinical differential diagnosis it is possible to confound two conditions with ectopic gestation; one of these, appendicitis, should give but little trouble if the case be carefully studied; the other, pelvic abscess, however, must be considered much more carefully, since in it lies the most fruitful cause of mistaken diagnosis.

Pelvic abscess may be acute or chronic in char-

acter, and in both we have a smooth, ill-defined fluctuating mass to one or other side, or to both sides of the uterus. The uterus is fixed, and where one side is alone involved it is pushed over to the opposite side of the pelvis. In the acute, the onset is sudden, marked by the occurrence of a rigor, and usually preceded by an acute inflammatory condition of the endometrium. In those cases following abortion or miscarriage, we have the history of the abortion or miscarriage, followed in a few days by an acute inflammation of the endometrium, which is followed quickly by the onset of the pelvic abscess. In the acute we have the signs and symptoms of a localized peritonitis with marked alterations in the temperature and pulse. In the chronic we have the history of chronic pelvic inflammation covering a considerable period of time with acute or subacute exacerbations from time to time. There is usually associated a condition of chronic endometritis, marked by a profuse uterine discharge. In both the acute and chronic types of abscess we have alterations in menstruation. In the acute we may have a temporary cessation of the function, but in the chronic we usually have a condition of profuse menstruation at irregular intervals, a profuse intermenstrual discharge and a marked dysmenorrhea.

In the extra-uterine pregnancy the onset is insidious and marked by the early signs and symptoms of a normal pregnancy as depicted above. It is not likely to be confused with pelvic abscess until the gestation has gone on up to the death of the fetus and the occurrence of a hemorrhage. Following a hemorrhage, if it be of any magnitude, we find the patient in a condition of collapse with marked alterations in the temperature and pulse due to shock, in which the temperature is lowered, and the pulse is quickened and of a thready character. As the patient reacts the condition of shock disappears, with an improvement in the state of the temperature and pulse, the temperature rising up from its subnormal state and the pulse becoming slower and of better quality. Following the condition of shock we have marked elevations of both the temperature and the pulse due to the absorption of fibrin ferment. This latter condition may subside or the temperature and pulse may continue to be elevated, and it is then due to an infection of the clot, giving rise to the signs and symptoms typical of pelvic abscess. As pointed out above on the death of the fetus there is from the uterus a blood-stained discharge, which may give rise to a distinct odor, due to stagnation of the discharge in the posterior cul-de-sac.

Before taking up the differential diagnosis by

means of laboratory findings it may be wise to refresh your mind by a brief histological description of a normal endometrium and a decidual membrane. A normal endometrium consists of two parts: First, the muscularis mucosae. Second, the corium musocae. The muscularis mucosae, being the outer part, does not enter into the scope of this discussion. The corium mucosae, or mucosae proper, however, is of great importance and demands close attention. It may be divided into two parts: First, that portion lining the body of the uterus, and second, that portion lining the cervix. In the portion lining the body of the uterus we find the following histological points: it is composed in a great measure of small, rounded, spindle-shaped, or irregular cells imbedded in a homogeneous intercellular substance, and with but few connective tissue fibers apparent. Its surface is covered by columnar ciliated epithelium. The uterine glands are simple tubes lined by columnar ciliated epithelium continuous with that on the surface. They run obliquely and often with an irregular and convoluted course into the deeper parts of the membrane, terminating in the musculares mucosae, and even in some cases in the uterine muscle itself. The mucous membrane of the cervix differs from that of the body in being more fibrous. The glands are more sacular. The epithelium of the surface is stratified in the lower part, but columnar ciliated in the upper. The glands are all, however, lined by columnar ciliated epithelium. Besides the follicular glands there are to be commonly seen clear yellowish vesicles of variable size embedded in the membrane. These are called ovulae nabothi and probably arise from closed and distended follicles.

A decidual membrane consists of two parts: First, the superficial cellular layer. Second, the deep granular layer. If spontaneously passed the greater part of the glandular layer remains behind, and from this the uterine mucous membrane is regenerated. When curretted away both layers are removed. The cellular layer is made up mainly of the characteristic decidual cells. These cells arise from the stroma cells of the interstitial tissue of the uterine mucous membrane. They usually contain a rounded nucleus surrounded by a broad border of protoplasm. They closely resemble one another in size and shape, and are closely packed together with very little intercellular substance. Occasionally we have a condition of decidual endometritis which is characterized by an extensive small cell infiltration, principally into the interstitial layer of the membrane. This may become so marked as to obliterate the characteristic decidual cells. Later on the cellular infiltration is replaced by a dense network of

fibrillar connective tissue. It commonly gives rise to abortion and this may be followed by an infection, leading up to a condition of pelvic abscess.

In our differential diagnosis by means of laboratory findings we have pelvic abscess, principally, to deal with, but we must also differentiate the different classes of endometritis from the decidual membrane found in the pregnant state. Endometritis is, of course, only important as far as this present discussion is concerned when associated with a swelling situated to one or other side of the uterus. In the endometrium, as in other tissues, an acute inflammation is characterized by an extensive small cell infiltration giving rise to swelling and redness of the membrane. In the chronic, the cell infiltration is replaced by the formation of fibrillar connective tissue, and this may lead to atrophy of the membrane and fatty degeneration of the stroma cells. Endometritis may be divided into the following classes: First, the interstitial; second, the glandular; third, the diffuse or fungous; fourth, the exfoliative or membranous. In the interstitial form the stroma cells have a great variety of shapes and sizes and lay imbedded in a homogeneous intercellular substance, whereas the decidual cells closely resemble one another, lie closely packed together and are only separated by a thin homogeneous intercellular substance. In the glandular form the trouble is practically confined to the glandular parts of the membrane and should not give us any trouble in our differential diagnosis. In the diffuse or fungous form we have a mixture of the interstitial and glandular varieties and it should not be the source of much trouble. In the exfoliative or membranous form we have inflammatory changes in the interstitial tissue with well marked small cell infiltration. The stroma cells are increased in size and resemble very closely the decidual cells, but the latter are more regular in size and shape, and are more closely packed together. In all these conditions of endometritis due to extension from the vagina we may find bacteria. The streptococci, the staphylococci, the gonococci and the bacilli coli communis are those most commonly found. These may be discovered not only in the secretions of the mucous membrane but also in the membrane itself.

In the acute pelvic abscess we have a marked leucocytosis with a preponderance of the polynuclear forms even up to 98 per cent. In the chronic there may be little or no difference in the leucocyte count. In the acute type the vaginal discharge and the uterine scrapings are found to be loaded with pus cells. Smears and cultures demonstrate microorganisms in great numbers, and of these the strep-

tococci, the staphylococci, the gonococci and the bacilli coli communis are the commonest. If the streptococci or the staphylococci are present the opsonic index to the one demonstrated is usually found at a low level. In those cases following abortion the curette encounters a placental site, and the microscope shows typical decidual cells, but in addition it also shows chorionic villi. In the chronic types of abscess the bacteriological findings in the uterus and vagina may be insignificant, but the uterine scrapings usually reveal a condition of interstitial endometritis.

In the extra-uterine pregnancy we have following a hemorrhage, if it be of any magnitude, a leucocytosis with a marked increase in the number of the polynuclear cells, but the count does not go so high as that found in the case of abscess, and moreover it quickly subsides. In addition, however, to the leucocytosis we have a marked decrease in the number of red cells, and a marked lowering of the hemoglobin percentage. Unless the patient has had a vaginitis prior to the impregnation, smears and cultures do not demonstrate any, or at most a very few bacteria. The uterine scrapings show no sign of pus, but do demonstrate that the normal endometrium has been replaced by a decidual membrane. There is no evidence of chorionic villi.

Of the two cases of extra-uterine pregnancy mentioned in the fore part of this paper as diagnosed by means of laboratory findings, one is of special interest, not only on account of its great rarity, but also from its possessing several interesting diagnostic points.

Miss "X," aged 28 years, single. Complaining of pain in the abdomen, profuse blood-stained vaginal discharge, feverishness and headache for the last four weeks. Past history: Healthy up to one month ago. Menstrual history: Commenced menstruating at the age of fourteen; the periods have been regular, lasting three or four days, no dysmenorrhea, the loss not profuse and no intermenstrual discharge. No history of a missed period.

History of the Present Illness.—The illness commenced four weeks ago with pain in the abdomen, fever and a blood-stained discharge from the vagina. These symptoms continued and gradually increased in severity until ten days ago, when she was forced to go to bed. The temperature was irregular and marked by the occurrence of several chills. Condition at the time of consultation, July 10th, 1908: The diagnosis was "pelvic abscess," and we were asked to operate for such. My examination revealed the following physical signs: The temperature was 99.5 degrees, the pulse was 100. The tongue was heavily coated. The lung and heart sounds were normal, and the breasts were not enlarged or tender. The abdomen was distended and tender, especially so over the lower left quadrant;

the percussion note over that area was impaired, but not absolutely dull. Per vagina: The hymen was absent. The cervix was soft and placed in the right side of the pelvis and looking directly downwards; from the external os uteri exuded a blood-stained discharge with a fetid odor; the fundus of the uterus was enlarged, retroverted and pushed over to the right side of the pelvis and quite immobile. The left side of the pelvis was occupied by a large smooth, apparently fluctuant and very tender mass. The diagnosis was agreed to, and it was decided to curette the uterus and open the abscess through the vagina.

Operation July the 11th, 1908.—The parts being rendered aseptic, smears and cultures were taken from the external os uteri and vaginal mucous membrane. The cervix was soft and it was discovered that it needed very little effort to dilate it to the full. Smears and cultures were taken from the cavity of the uterus. The cavity was carefully explored, but did not reveal anything pointing to a placental site. The uterus was then carefully curetted; the scrapings were soft and very bloody, but no active bleeding occurred. A strong suspicion of extra-uterine pregnancy at once arose and further operative procedure was stopped pending the report of the laboratory findings. Bacteriological and morphological reports: The smears and cultures from the external os uteri and vaginal mucous membrane revealed only a few diplococci, and those from the cavity of the uterus revealed it to be sterile. The uterine scrapings were found to consist mainly of large round cells, and no sign of any inflammatory trouble could be made out. The diagnosis of extra-uterine pregnancy was made, and abdominal operation advised as imperative. The patient refused most indignantly to agree with the diagnosis, and furthermore refused operation, stating that she felt much better since the curettement. Her condition, however, did not improve, but continued to get worse, and on July the 18th, we were called in again and given permission to open the abdomen.

Operation July the 18th, 1908.—The abdomen was opened by a free incision in the middle line between the umbilicus and the symphysis pubis. The intestines, the uterus and left ovary were found to be all matted together in a mass. The adhesions were broken down and the parts defined as follows: The greater part of the mass was found to be a large cyst adherent to the upper and posterior surfaces of the fundus of the uterus, to an extensive area of a coil of the ileum, which was enlarged and very much thickened; the left ovary could not be made out, but the left ovarian vessels, very much enlarged, ran directly into the cyst wall. The left fallopian tube was seen coursing over the surface of the tumor; it was apparently normal in every way. During manipulation the cyst wall ruptured and a thick, deeply blooded, stained fluid gushed out, and with it a small solid body, which proved on examination to be a fetus about one and one-half inches in length. The sac was cleaned out, and it was estimated that about one quart of fluid had been removed. An attempt was made to remove the mass

from its attachments on the uterus and ileum, but the bleeding was so excessive that we decided to ligate the ovarian vessels. This was done and the hemorrhage at once ceased. The mass was then removed with comparative ease. There was, however, copious oozing from the raw sites on the fundus of the uterus and coil of the ileum. Examination of the right side revealed a multilocular cystic ovary about the size of an orange. This was also removed. The right fallopian tube was apparently normal in every way. The oozing from the uterus and ileum continued copious, making it necessary to place packing in position; this was brought out through the lower extremity of the wound and the remainder of the wound was closed in the usual manner. The drainage was very copious for a few days; it gradually became less in amount and finally ceased in about ten days. It closely resembled in character and amount a normal uterine lochial discharge. Bacteriological examination from time to time revealed it to be sterile. The convalescence was otherwise uneventful.

Examination of the Parts Removed.—The morphological pathology of the specimens does not enter into the scope of this present discussion, and let it suffice to say that the left-sided mass was found to consist of a sac wall, in which was situated a typical placenta. The placenta was two and a half inches in length, two inches wide, and three-quarters of an inch thick; intimately incorporated in it was the left ovary. The fetus was about one and a half inches in length. The right sided tumor was found to consist of one large cyst, and numerous small ones, the ovary being practically replaced by the cysts.

In conclusion, this case was, in our opinion, one of primary ovarian pregnancy. It commenced its growth in a ruptured Graffian follicle of the left ovary, and as it enlarged it became attached to the coil of the ileum and the fundus of the uterus. The placenta derived its blood supply from the fundus of the uterus, from the coil of the ileum and from the left ovary; its main supply was, however, from the left ovarian artery through the left ovary, as the active bleeding encountered early in the operation was controlled by the ligation of the left ovarian vessels. It is interesting to note that the drainage closely resembled in every way a normal uterine lochial discharge. It is also interesting to note that the fallopian tubes were apparently normal. It is our opinion that the fetus died about the time of the onset of the symptoms. The symptoms were due to the presence in that situation of a large foreign body, the occurrence of small repeated hemorrhages and the absorption of fibrin ferment. The absence of the early signs and symptoms of pregnancy, the occurrence of rigors from time to time with concurrent alterations in the temperature and the pulse, the fetid odor to the uterine discharge

and the presence of a large fluctuant, extremely sensitive mass to the left of the uterus made the diagnosis of pelvic abscess justifiable. The condition of the uterus, however, at the first operation was so suggestive that we deemed it wise to cease operating pending the report of the laboratory findings.

327 DELAWARE AVENUE.

EXCISION OF THE ELBOW JOINT; REPORT OF TWO CASES.

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As a result of injury and disease in and about the elbow joint it is common to find arms which are rendered practically useless. A recent case, where the patient refused operation and visited various clinics and hospitals, more and more impresses me with the truth of the above statement.

The most frequent reason for the loss of function is ankylosis at such an angle that the arm cannot be used for handling the knife and fork, dressing the hair, dressing and undressing, and following occupations which call for flexion and extension, pronation and supination. In fact, the sufferer is practically rendered one-handed.

Where the ankylosis is osseous, which is extremely unusual, operation is, of course, clearly indicated; but in those cases here it is fibrous and frequently complicated by swelling and pain, I find that the practice of breaking down the adhesions and instituting passive motion with a view of restoration of function is sometimes followed by the awakening of old tubercular processes, or by inflammation, necrosis, pain and swelling which eventually lead to fixing the member in such a position of flexion that it will be "of most use," i. e., give the patient a stiff elbow which allows of better function than that which previously existed.

I do not feel that by following this rule the surgeon has done all that he should do in many cases, for by a well planned excision a much better result can be expected. This fact is well known to many surgeons and to them it is a pleasure to look back on their results in these cases.

However, in cases where there is extensive tubercular mischief, or where inflammation has been

followed by necrosis of the neighboring bones, and abscesses leading to sinus formation, I think that very frequently free incision, curettage and the hope for a stiff elbow in "a good position" is too often the line of action, when an extensive excision would give a better result, fear of a flail joint not to the contrary.

It is with the hope of urging this practice that I venture this communication. Before going farther let it be understood that I only urge the operation of excision in individuals whose age is well within the working limit, say forty, unless the disease be of an active nature, where there is no choice but to operate.

I take it that the report of cases is the practical means of demonstrating the justice of the opinion I have expressed. Permit me to say that no description of the various operations for excision of the elbow joint will be introduced, since the writer is of the opinion that the time of the surgeon is too valuable to be occupied in reading a résumé of that which may be found in any work on general or operative surgery. Suffice it to say that in both of the following cases a single posterior median incision was used and that the customary care was taken in clearing the bones and sawing them through.

CASE I.—Miss F., aged 24, was thrown from a buggy, sustaining a severe comminuted fracture of the condyles of the right humerus, which extended to the elbow joint, as well as a fracture of the olecranon process of the ulna. The doctor who first saw the case put up the arm in a straight position, using a posterior splint which was replaced in two weeks by a plaster cast, this being removed during the third week, when the patient was told to exercise the arm. This she was unable to do, as she could neither flex the arm nor pronate or supinate the forearm. After visiting several surgeons, who informed her that nothing could be done she started for the Sandwich Islands as a school teacher, and en route called upon me while in San Francisco.

When I saw her the condition was as follows: The general health of the patient was bad and she might be described as being generally "run down." The elbow was ankylosed so that the forearm was at an angle of 135 degrees to the arm. She could neither supinate nor pronate the forearm, which occupied a position slightly nearer supination than pronation. All the muscles acting on the elbow joint were atrophied, and the arm was from its position practically useless. The elbow joint was obliterated by a callous mass which gave it a swollen appearance, and this was painful on pressure and on attempts at forcible motion. On consultation it was decided that nothing short of excision of the destroyed joint could be of any benefit. The patient agreed and the operation was performed. As soon

as the incision was made and efforts at clearing the bones were begun, we found that inflammation of the lower end of the humerus had occurred and that the bone was so disorganized that it would be necessary to remove an unusually extensive portion to escape diseased tissue, so that with great misgivings we sawed the humerus through an inch above the margin of the olecranon process. The arm was put up at right angles. At the end of the first week passive motion was instituted, and in the course of the second week the forearm had been gradually carried through various angles until it was brought from full flexion to full extension. The passive motion was continued throughout the whole course of the treatment. On the third week the wound was healed with the exception of a small sinus which led down to the lower end of the humerus, and as this would not heal it was laid open, when we were able to remove a ring of bone which had necrosed and which was about one-quarter of an inch in length. The wound now readily healed, the patient commenced voluntary efforts at flexion and extension, but the limb was like a flail and would fall from one side to the other in a helpless manner. In order to correct this I had made a steel joint to take the place of the internal and external bony and ligamentous lateral supports, and to my gratification the patient rapidly improved her power of motion and moreover developed an extensive pronation and supination, which she aided by rotation of the humerus.

When I last heard of her she was able to play the piano, dress and feed herself, "do up her back hair," and when dressed could readily conceal her injury except to the practised eye, which would, of course notice the shortening. Since the foregoing report I have received a letter from the Sandwich Islands in which Miss F. informs me that her arm has grown stronger steadily, and that she can now "put up an eight-pound dumb-bell over her head."

CASE II.—R. O., aged 26, was struck by a piece of iron on the tip of the left elbow. The joint was swollen and painful and the arm fixed in the extended position remaining so for a year, when efforts were made to forcibly flex the joint. This led to increased pain and stiffness and subsequently an abscess formed just above the olecranon process, which opened itself and continued to discharge up to the time when I first saw him. On examination a sinus was found to lead down to a caries of the olecranon and also of the articular surface of the humerus. The joint was swollen and all the bones going to form it were thickened. The arm was fully extended and there was no power of flexion, extension, pronation or supination. The muscles of the arm and forearm were much atrophied.

Excision of the joint was advised and agreed upon. The operation showed the joint to be tuberculous and it was necessary to remove half an inch of the shaft of the ulna as well as an unusually large portion of the humerus, the section being made about half an inch above the margin of the olecranon fossa. Only the upper portion of the

excision wound was stitched and the cavity (after extensive curetting and free use of the scissors to remove suspicious tissue) was packed with iodoform gauze.

The after-treatment was much the same as in case one, except that no steel joint was found necessary. At first there was a tendency to a flail joint but the parts contracted and the muscles adapted themselves to the new conditions.

The eventual result will be best understood by quoting the patient's words when I recently removed a small piece of bone, two years after the original operation.

I asked him what he had been doing; he said that he had been washing dishes, picking fruit, waiting on table and wood-chopping, all of which occupations require that the elbow joint should have extensive motion. I then requested him to go through the motions of extension, flexion, supination and pronation with his coat on in the presence of two doctors who, when asked what was the matter with him (not knowing of the operation) said that his arm was congenitally shortened.

In commenting on these two cases let it be said that there is nothing unusual except the extensive removal of bone, and it is to this that I desire to call particular attention, in fact it is the sole reason for the present report. In Case I, on discovering the extensive destruction of the humerus, I felt hopeless as to the future possibility of obtaining a movable joint, and it is indeed strange that the muscles could so adapt themselves to the new conditions that an almost normal range of motion resulted, even with the aid of a mechanical steel hinge. I desire to call attention to the fact that the collar which surrounds the forearm need only be tight enough to keep the apparatus in position and does not interfere with supination and pronation of the forearm.

In Case 2 it seemed almost foolish to attempt anything but amputation, but with the memory of Case I as a guide, the operation was not only done, but proved most successful and instead of an armless cripple we have a man who when dressed and ordered to go through a wide range of motion makes it difficult for even a medical man to diagnose his condition.

I trust that these two cases may in some slight measure demonstrate the fact that even extensive removal of the elbow joint may be followed by good results, and that one should hesitate in cases of extensive destruction before he is satisfied with either a stiff joint or decides to amputate the limb, since he can always carry out either plan should efforts for a movable joint fail.

A CASE OF EXTENSIVE CHEST INJURY—
PLASTIC OPERATION—RECOVERY.

W. H. AXTELL, A.M., MD.

BELLINGHAM, WASH.

I report this case because of the extensive injury sustained, the amount of tissue destroyed, the extensive exposure of the chest cavity, and the complete destruction of the costal pleura. Another feature worth mentioning in the repair of the injury was the use of muscular tissue in the closing of the pleural cavity.

History.—Male, German, aged twenty-eight years, shingle sawyer, robust and very muscular; had served three years in the German navy, and several years as a seaman on a German merchant vessel. No history of specific disease, although a chronic fistulous tract repaired promptly under iodides.

The Accident.—August 26, 1907, at 7 A. M., when starting to work, the patient fell against a large circular saw, containing large teeth, with wide set, which was revolving many thousand times per minute.

The Injury to Hand.—In order to protect his body he thrust his right hand into the saw, severing the thumb and first and second fingers at the second joint, and the third finger at the third joint.

To Chest.—The saw first struck flat on the chest, the teeth scratching the skin only; but as the body turned slightly the teeth struck deep into the chest, making a semi-circular cut $19\frac{1}{2}$ inches in length. The upper end of the cut began slightly below and to the outer end of the left clavicle, and slightly above the margin of the anterior axillary fold. From this point the cut extended circularly downward and inward to one-half inch to the right of the sternum, thence downward and outward again to within two inches of the axillary line, and over and through the abdomen below the margin of the ribs. All of the tissues, including the soft and osseous tissues, were completely severed and a large portion carried away and destroyed.

The saw over the sternum was only superficial, but as the body made a slight turn it entered deeply into the chest cavity destroying all of the tissue, including the ribs and costal pleura to a width of $3\frac{1}{2}$ inches by 6 or 7 inches in length, thence, as the body turned slightly again the saw ploughed along the surface of the ribs, underneath the skin and muscles of the chest wall; the cut and retraction making a wound 10 inches in width at the center

of the chest, and at the concavity of the semi-circle.

Sections of the second, third, fourth, fifth and sixth ribs were destroyed, varying from one inch at the second, to three inches at the fourth and fifth ribs. The costal pleura was completely destroyed over the seat of the greatest injury. The lung and pericardium were exposed. There was one puncture of the lung from which the air bubbled, and emphysema followed. All the intercostal arteries, veins and nerves in the injured area were severed; the pectoralis major was severed completely from the chest, and a small portion of the pectoralis minor. The patient, having fallen face downward onto a dust pile, the whole exposed surface became filled with dust and grease.

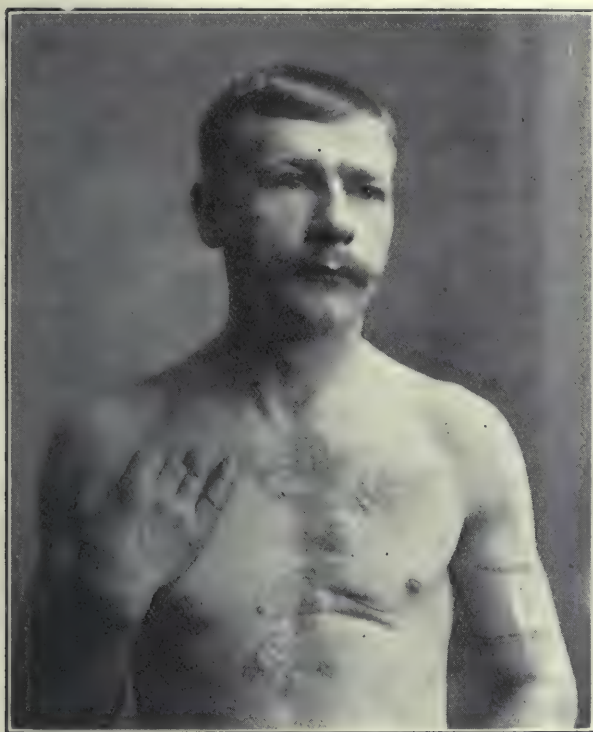
Operation.—With the assistance of my associate, Dr. Max Mehlig, I attempted to repair the damage. Over 450 speculae of wood fiber were picked out, piece by piece, from the chest cavity, and the surface of the lung. Several large lumps of dust, covered with grease, were removed from the depths of the chest cavity. All the ragged edges of the costal pleura, skin, and muscles were trimmed away. The jagged and uneven ends of the severed ribs were cut off smooth, in order to bring the periosteum over them. The costal pleura being destroyed, we made a transverse incision in the pectoralis major muscle near its point of attachment to the humerus, and separated a strip parallel with its fibers to within one-half inch of the costal end that had been severed. This strip of muscle was turned and sutured into the space where the costal pleura had been destroyed. It was sutured to the intercostal muscles, periosteum over the stump of the ribs, and the margin of the sternum. This attempt at plastic covering was made in the hope of closing off the cavity, and, if possible, to supply the missing costal pleura. Incisions parallel to the ribs were made, one on each side of the rib, in order to drain the chest cavity. The severed muscles were drawn together and held by cable sutures, to prevent the contraction and opening of the wound. The skin was drawn together at a few points only, being left open sufficiently to protect the transplanted muscles from infection.

Subsequent History.—Primary union of the transplanted muscle was secured, and the chest closed. The emphysema was enormous the first 24 hours, extending to the scalp above and the knees below, but disappeared in 48 hours. The thumb and fingers were amputated after the wound was dressed. The patient was about in a roller chair in two weeks. At the end of three weeks secondary

suturing of the skin was done, and at the end of six weeks the patient had recovered except for a small fistulous skin wound over one of the ribs. In all there were something like 180 buried sutures and ligatures used. The time consumed in picking out the wood fibers, grease, making the wound aseptic and repairing the injury was five hours.

To summarize, the striking features of this case are:

- (1)—The extent of the injury.
- (2)—The extensive exposure of lung and pericardium, and the puncture of the lung.
- (3)—The complete destruction of all costal pleura over an area of about $2\frac{1}{2}$ or 3 inches in width by 4 or 5 inches in length.



(4)—Successful substitution of muscle for pleura by transplanting.

(5)—No adhesions or restriction of lung expansion.

The accompanying photograph of the patient, taken one year and four months after the injury will give an idea of the extent of the injury. The multiple keloids seen in the skin are due to severe scratching by the saw teeth before entering into the deep structure. The upper end of the scar shows much lower than where the cut actually was. This is due to the contractions and to the fact that the upper skin margin was drawn down and made tenser than the lower flap. All the scar on the abdomen is not shown accurately.

STOMACH SURGERY.

There are a few fundamental principles which must be observed in order to secure permanently satisfactory results:

1. The amount of traumatism must be reduced to a minimum.
2. The intraabdominal organs must be exposed as little as possible to cold air or cool pads.
3. The patient must be placed in a sitting posture as soon as possible after the operation.
4. In case of closure of perforation, the direction of the wound must be chosen so as not to result in obstruction later as a result of cicatricial contraction.
5. In case of excision of a neoplasm, all the tissue closely connected must be removed with the growth to the greatest extent possible in the presence of existing anatomical relations.
6. In gastroenterostomy the lowest portion of the stomach must be chosen, no matter whether anterior or posterior gastroenterostomy be performed, the latter however being preferable.
7. There must be no tension upon any sutures in any gastric operation.
8. Except in complete gastrectomy, the coronary artery must always be preserved.
9. In patients with an unusually fat transverse mesocolon, in whom posterior gastroenterostomy is performed, the opening should be torn very large and the edge should be sutured to the stomach in order to prevent obstruction.
10. In case of acute gastric dilatation following any stomach operation, a stomach tube should at once be introduced and gastric lavage be employed, care being taken not to introduce more than one-fourth liter of water at a time.
11. The simplest possible technic should be employed, preferably without the use of mechanical apparatus.—A. J. OCHSNER in *The Interstate Medical Journal*.

EARLY DIAGNOSIS OF GASTRIC CARCINOMA.

The greatest strides made in recent times in the recognition of early cases of gastric carcinoma have been limited to the laboratory and surgical phases of the subject. The clinical significance of the laboratory findings, however, differs according to different observers; they are not to be isolated from the symptoms and course of the disease, but judiciously balanced and compared with the clinical characteristics and the steady progression with occasional slight remissions of the disease.—JAMES M. ANDERS in *The New York Medical Journal*.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, FEBRUARY, 1909.

ANNOUNCEMENT.

It affords us much pleasure to announce that Dr James P. Warbasse, formerly Editor of the *New York State Medical Journal*, has joined the staff of the AMERICAN JOURNAL OF SURGERY as Special Editor.

An experienced surgeon and a trained medical journalist, his contributions to our editorial pages will, we are sure, be welcomed by our readers.

RECENT STUDIES OF HEMOLYSIS IN ITS RELATIONS TO MALIGNANT GROWTHS.

Serum pathology has developed that certain interesting phenomena—corpuscular agglutination and lysis—sometimes occur as the result of mixing the red cells from the blood of one individual with the serum from another, or, occasionally, the same individual; and in many laboratories attention is directed to-day to the study of the significance of these phenomena and the conditions under which they occur.

Fresh impetus has been given to these investigations, from the therapeutic side by the necessity for making blood tests before performing transfusion,

and from the diagnostic side by the demonstration that the development of an (iso)hemolytic property in blood serum is a phenomenon largely limited to certain usually severe diseases, and especially common in cases of cancer.

Among the important contributions to the subject are those of Ascoli in 1901, and, more recently, those of Kelling, Crile and, especially, Weil. Ascoli¹, among others, found that in some diseases, among them cancer, the serum agglutinated the corpuscles of normal individuals, and that the corpuscles from another individual with the same disease resisted this action. He also found that normal blood serum was not hemolytic, and that this was also true of the serum he tested from individuals with various diseases, e. g., rheumatism, nephritis, gastritis. But in a large number of cases of tuberculosis and of pneumonia, and in two cases of gastric cancer he found the serum markedly hemolytic. Eisenberg is reported to have found hemolysis in a large percentage of cases of scarlatina, typhoid and syphilis. Kelling² found that in 43 per cent. of the cases of cancer tested by him the serum was lytic to the corpuscles of sheep, cows and chickens, and that this obtained in less than 4 per cent. of other disease sera tested.

Richard Weil, after experimenting with the tissues of dogs affected with transplantable lymphosarcoma, reported³ that fresh extracts made from undegenerated tumors and from most of the dogs' normal organs were slightly lytic to the corpuscles of other dogs, and more so when there was added an extract of red blood cells; and that extracts of necrosed portions of the tumors were very markedly hemolytic without the aid of any complement. To determine whether this action was due to autolytic products in the broken-down tumors, he experimented with extracts of dogs' organs artificially autolyzed *intra vitam* and outside of the body, and found that these extracts were likewise markedly hemolytic. These findings strongly support the belief that the cachexia and anemia of malignant growth are due to a specific toxic action developed by necrobiosis of the tumors.

Weil next undertook to determine whether the circulating blood itself of dogs suffering with lymphosarcoma would show the presence of this toxic material. He adopted a new method of studying hemolysis, including observations not only of the reaction of the serum, but also of the resistance of the corpuscles to that serum. He found⁴ that "the serum of all the tumor dogs is distinctly more hemolytic than is the serum of non-tumor dogs"

. . . and . . . "the corpuscles of the tumor animals are always more refractory than are the normal; they break down less rapidly and less completely."

Upon the completion of these animal observations Weil made a series of tests of the blood of cancer patients⁵, employing the same double reaction. He found that the serum hemolyzed alien, but not its own corpuscles ("positive reaction") in 40 per cent. of early and 56 per cent. of late malignant tumors, 33 per cent. of benign tumors and 26 per cent. of other diseases. In a general way these results correspond with those of subsequent observers whose percentages of positive reactions, however, vary within a fairly wide range.

H. H. Janeway⁶, following Weil's method, has just reported positive reactions in 57 per cent. of early and 40 per cent. of late carcinomata; negative reactions in all (10) cases of rodent ulcer, except one advanced case; negative reactions in all normal sera; marked hemolysis in one case of chronic mastitis.

A. S. Blumgarten⁷, also working on the plan formulated by Weil, but with a slight elaboration which, he thinks, accounts for the higher percentage in cancer sera, reports a positive reaction in 18 of 25 advanced cancer cases (72%), in 4 of 40 other diseases, and in 1 of 10 presumably normal cases.

Crile⁸, likewise employing Weil's method, claimed that in all early cases of malignant growth the serum is hemolytic and the corpuscles are resistant to their own or other cancer serum, that these reactions are very delicate, and that they disappear as the tumor progresses. Weil, whose attitude in all his reports has been very conservative, is unwilling to accept all of Crile's findings. Janeway and Blumgarten also are skeptical of the accuracy of his technic. In a later paper⁹ Crile reported observations on the red cells and serum of 600 patients—normal and variously diseased. He and his laboratory assistants found hemolysis 7 times in 71 pyogenic infections, 48 times in 52 cases of tuberculosis, 130 times in 153 cancer cases; in all of 11 post-operative cancer cases with recurrence, and in none of 37 post-operative cases without signs of recurrence.

The most striking finding in this last report of Crile's is that all cases of tuberculosis showed reverse hemolysis, *i. e.*, of the patient's corpuscles by normal serum. Since tuberculosis is, next to cancer, the disease in which, it would seem, hemolysis most often occurs, this reverse reaction would serve to differentiate diagnostically. But Crile's finding in this particular must first be corroborated. Perhaps his adoption of a technic departing from that of

others will account for his results with tuberculosis and his high percentages in cancer.

These studies have thrown light on the cause of cachexia in malignant growths, they have opened up a wide field of observation and of speculation, they have suggested the possibility of securing a diagnostic blood reaction. But they also show that hemolysis, as we thus far understand it, is by no means a specific reaction. There will need to be considerable elaboration of technic before it can be raised to the dignity of a diagnostic test, and then much simplification of technic to make that means of diagnosis generally available. W. M. B.

¹ Muenchener Medizinischer Wochenschrift, 1901, p. 1239.

² Berliner Klinische Wochenschrift, 1907, p. 1355.

³ Journal of Medical Research, 1907, XVI, 287.

⁴ Archives of Internal Medicine, January, 1908.

⁵ Journal of Medical Research, October, 1908, Vol. XI, 2.

⁶ Annals of Surgery, January, 1909.

⁷ Medical Record, January, 1909.

⁸ Journal of the American Medical Association, 1908, 1; 1888, 61, 158.

⁹ Journal of the American Medical Association, December 12, 1908.

ANNOUNCEMENT.

The next issue of the AMERICAN JOURNAL OF SURGERY will be a special Greater New York number devoted to contributions, many of them written for the occasion, by New York City surgeons.

Among these articles will be the following: "A New Method of Intestinal Resection," describing a bold and very simple means of closing the cut ends of the bowel, by Howard Lilienthal; "Carcinoma of the Breast," by Willy Meyer; "Sigmoiditis and Perisigmoiditis," by James P. Tuttle; "A New Method of Blood Transfusion," by John A. Hartwell; "On the Avoidance of Hemolysis in Transfusion," by Richard Weil and Martin Rehling; "A New Operation for the Correction of Retrodeviation of the Uterus," by John Van Doren Young; "Fibrosis Uteri and Its Surgical Treatment," by Samuel W. Bandler; "Dislocation of the Cervical Vertebrae," by James P. Warbasse; "A Modified Operation for Inguinal Hernia," by Albert E. Sellenings; "Plastic Mastoid Operation; a New Operation for Acute Mastoiditis," by T. F. Hopkins; "On the Surgery of Foreign Bodies, with Especial Reference to those in the Skeletal Tissues—Methods of Localization and Removal," by Walter M. Brickner.

Surgical Suggestions

W. M. B.

H. M. H.

Dryness of the pharyngeal wall is usually associated with an atrophic rhinitis.

The best point for entering the maxillary antrum is about one inch from the edge of the nostril, below the inferior turbinate.

There is less likelihood of injuring the deeper vessels in excising tonsils if the instrument is pressed in deeply to engage the organ rather than exerting pressure from the outside.

Hard tonsils preponderating in connective tissue, are better removed by the cold snare than by a sharp instrument. The snare closes the blood nerves; the tonsillitome opens them.

An hypertrophied lingual tonsil sometimes causes much discomfort, giving a heavy, sore feeling to the base of the tongue. It may be necessary to remove it.

The differentiation between a specific and tuberculous ulcer of the fauces is sometimes very difficult. As a rule the specific ulcer is shallow, grayish, with a regular margin, not very tender and does not cause dysphagia; on the other hand, a tuberculous ulcer is deeper, more sloughy, irregular in outline, has an outer inflammatory zone, is exquisitely tender and causes great pain on swallowing; laryngeal examination may reveal a tuberculous condition of the cords.

Suppurating arthritides do not always require exposure of the joint or even large incisions, irrigation and drainage. Such treatment invites mixed infection and ankylosis. If the pus be very thin—even though of streptococcic origin—thorough aspiration (which may need to be repeated) and immobilization may effect a rapid cure with perfect function. Purulent arthritis and peri-arthritis as it occurs in small children as a complication of one of the exanthemata (often in connection with trauma) is often quite amenable to conservative, and even ambulant treatment: aspiration, or irrigation and drainage, and immobilization. Judgment is needed, of course, to determine what cases are amenable to this conservative surgery, and what point in the treatment it must be abandoned in favor of more extensive intervention.

Book Reviews.

Pulmonary Tuberculosis and Its Complications. With Especial Reference to Diagnosis and Treatment for General Practitioners and Students. By SHERMAN G. BONNEY, M.D., Professor of Medicine, Denver and Gross College of Medicine; Visiting Physician to St. Luke's Hospital, Denver. Octavo; 778 pages; 189 illustrations (20 in colors). Philadelphia and London; W. B. SAUNDERS Co., 1908. Price, cloth, \$7.00 net; half morocco, \$8.50 net.

In his attempt to render this work as practical as possible, the author has reduced the bacteriological and pathological aspects to a minimum. On the other hand, 139 pages are devoted to the symptoms and physical signs. These phases of the subject are discussed exhaustively. Diagnosis is attended to in 64 pages, especial attention being paid to the x-ray, a method of diagnosis upon which the author places great value. Although the experience of the author in regard to the conjunctival reaction of Wolff-Eisner is small, he is convinced of its value in doubtful cases. A section on prognosis of 24 pages covers the ground exceptionally well. The succeeding sections, consisting of 235 pages, deal with all the phases of tuberculosis of the organs of the body.

It is gratifying to note that the author is well versed in the indications and methods of surgical treatment. He is right in emphasizing the value of the all too neglected open air methods in the treatment of surgical tuberculosis. The final section of 112 pages is devoted to prophylaxis and treatment of pulmonary tuberculosis. The author devotes much space to the social aspects of the consumptive, and the administrative supervision, and education, both of himself and of the public. The varieties and methods of open air treatment are thoroughly discussed, and especial attention is paid to the proper construction of open air habitations. The methods of open air treatment in the patient's own home are, however, not neglected. The climatic conditions of the various sections of this country that have been recommended for the consumptive are concisely summarized and the dietetic considerations are given due importance.

The author has little use for drugs except in the treatment of symptoms. He has had a large experience in the therapeutic use of tuberculin and bacterial vaccines, and is convinced of their benefit in certain cases. He has little or no use for the opsonic index as a guide to the dosage.

The only defect that we have noted in this work is a certain diffuseness of expression and a lack of sufficient head-lines or italics to break the monotony of page upon page of text. Only one important omission of clinical importance has been noted, namely, the lack of mention of choroidal tubercles in the diagnosis of acute miliary tuberculosis. The illustrations are of unusual excellence and very profuse; in fact, many of these appear to us entirely unnecessary. The value of the book would be somewhat enhanced by the introduction of references to the literature.

All in all, this is one of the best works on the clinical aspects of pulmonary tuberculosis with which we are acquainted.

Diseases of the Skin and Eruptive Fevers.

By JAY FRANK SCHAMBERG, M.D., Professor of Dermatology and Infectious Eruptive Diseases in the Philadelphia Polyclinic and College for Graduates in Medicine, etc. Octavo; 534 pages; illustrated. Philadelphia and London: W. B. SAUNDERS COMPANY, 1908. Price, \$3.00 net.

The numerous text-books on Diseases of the Skin leave very little to be desired in the way of new books of this kind. Schamberg's work, however, possesses distinctive features that make it especially useful. We refer especially to the excellent chapters dealing with the skin manifestations of the exanthemata and of those acute infectious diseases, such as typhoid and meningitis, with which eruptions are often associated.

The book is not as large as it would be if skin diseases were treated exhaustively. The author has dealt with them

chiefly from the clinical viewpoint, pathology being but briefly considered.

The illustrations, without which a book on skin diseases would be of little value, are an excellent aid to diagnosis, being mostly photographic and well reproduced. Color reproductions, however, would have added much to their usefulness. Typographically the book looks well.

Seven Hundred Surgical Suggestions. Practical Brevities in Diagnosis and Treatment. By WALTER M. BRICKNER, B.S., M.D., Assistant Adjunct Surgeon, Mount Sinai Hospital; Editor-in-Chief, AMERICAN JOURNAL OF SURGERY, New York; ELI MOSCHOWITZ, A.B., M.D., Assistant Physician, Mount Sinai Hospital Dispensary, Associate Editor, AMERICAN JOURNAL OF SURGERY, and HAROLD M. HAYS, M.A., M.D., Associate Editor, AMERICAN JOURNAL OF SURGERY. *Third Series.* Duodecimo; 150 pages. New York: SURGERY PUBLISHING COMPANY. 1909.

The earlier editions of this little book ("Surgical Suggestions," 1906, "500 Surgical Suggestions," 1907) proved very popular and their contents were widely quoted. In this series about two hundred new "Suggestions" have been added to those previously published. While these seven hundred paragraphs represent only random observations in surgical diagnosis and treatment, they cover, when thus gathered and arranged, a great deal of useful information, not ordinarily found in the text-books.

This enlarged issue of what the authors have termed "diagnostic hints and therapeutic wrinkles" ought to continue the popularity of its predecessors, like which, it is printed and bound very tastefully.

Diseases of the Genito-Urinary Organs and the Kidney. By ROBERT HOLMES GREENE, A.M., M.D., Professor of Genito-Urinary Surgery, Medical Department at Fordham University; Genito-Urinary Surgeon to the City and to the French Hospitals, N. Y. City; and HARLOW BROOKS, M.D., Assistant Professor of Pathologic Anatomy, University and Bellevue Hospital Medical School; Visiting Physician to the City Hospital, N. Y. City. *Second Edition.* Octavo; 605 pages; 275 illustrations. Philadelphia and London: W. B. SAUNDERS CO., 1908. Price, cloth, \$5.00, net; half morocco, \$6.50, net.

The first edition of this work was reviewed in our issue of January, 1908. We are glad to note in this edition a considerable improvement over the first, and the incorporation of much that is new and important in urology. The work has been enlarged by about 70 pages, representing for the most part entirely new matter.

A Reference Hand-Book of Gynecology for Nurses. By CATHARINE MACFARLANE, M.D., Gynecologist to the Woman's Hospital of Philadelphia. 32 mo; 150 pages; 68 illustrations. Philadelphia and London: W. B. SAUNDERS COMPANY, 1908. Flexible leather, \$1.25.

This is a pocket manual of the technic of gynecological nursing, admirably prepared.

Books Received

Surgery of the Upper Abdomen. In Two Volumes. By JOHN B. DEEVER, M.D., LL.D., Surgeon-in-Chief to the German Hospital, Philadelphia, and ASTLEY PASTON COOPER ASHHURST, M.D., Surgeon to the Out-Patient Department of the Episcopal Hospital, Philadelphia. Vol. I: Surgery of the Stomach and Duodenum. Octavo; 468 pages; 76 illustrations. Philadelphia: P. BLAKISTON'S SON & Co., 1909. Price, \$5.00, net.

Taber's Pocket Encyclopedic Medical Dictionary. Edited by CLARENCE W. TABER, Author of "Taber's Medical Dictionary for Nurses," "The Secret of Sex," etc. Associate Editor, NICHOLAS SENN, M.D., Ph.D., LL.D., C.M., Late Professor of Surgery, University of Chicago, etc. 16 mo; 418 pages. Leather bound. Chicago: C. W. TABER, 1908.

Progress in Surgery.

A Résumé of Recent Literature.

A New Method for the Transfusion of Blood. (Preliminary Communication.) ROBERT T. FRANK, New York. *New York Medical Journal*, November 28, 1908.

Noting that the Crile and Carrel methods of transfusion are attending with considerable technical difficulty. Frank has devised a method by which the extensive dissection and manipulation of the artery is avoided. The essential feature of this method consists in the use of a connecting link, derived from the carotid artery of a dog. About 2½ to 3 inches of the carotid artery are removed and immediately plunged into sterile salt solution. The artery is then milked of its contained blood and thoroughly washed. The adventitia is there stripped back at each end, and each of these ends is drawn through and cuffed and tied over a Crile or other convenient canula. If obtained aseptically and kept at 33 degs. F. in normal salt solution, these prepared links can be preserved for at least one week.

About one inch of the artery of the donor—in man the radial—is exposed under local anesthesia, but no great care need be exercised in freeing the vessel from its sheath. A silk ligature is passed beneath the artery, but not tied. A vein, selected in the recipient, is laid bare in the same manner and a ligature passed. A serre-fine or Langenback hare-lip clamp is placed at the central exposed portion of the artery and at the distal part of the vein, to stop the circulation. The artery is now pulled out of the wound by means of the ligature, and with one snip of the scissors a small transverse slit is made into its lumen. The edges of this slit are drawn apart by the operator and his assistant with curved eye forceps. Through this aperture one end of the cuffed link is introduced, toward the heart, and the silk ligature is tied in the first or lower groove. The vein is treated similarly, and the opposite end of the cuffed link is inserted toward the heart and secured in place by the ligature. The serres-fines are now removed and the transfusion allowed to proceed. Throughout the manipulation both wounds should be kept well moistened with salt solution. While the transfusion is in progress the link must be supported by a gauge sponge, saturated in salt solution and covered by another moist compress.

After the exchange of blood has been effected, both artery and vein are tied off with catgut, above and below the small slit made, and the injured portion excised.

The preparation of the link can be performed anywhere where aseptic procedure can be carried out; but further experiments are now in progress, looking to their more permanent preservation. If these efforts should prove fruitful it might be feasible to keep them on hand for an emergency, just as suture material is now preserved.

Frank has thus far found that the use in this manner of a well washed alien blood vessel entails no danger of hemolysis or clotting.

Results of the Transplantation of Bloodvessels, Organs, and Limbs. A. CARREL, New York. *Journal of the American Medical Association*, November 14, 1908.

Carrel gives an account of the experimental work on animals in auto- and heterotransplantation of vessels, organs, etc. He shows that vascular suturing, under aseptic conditions and correctly applied, gives excellent results, but a fault of technic, even very slight, can be followed by obliterative thrombosis. Success depends less on the way of handling the needles or passing the threads, than on a knowledge of the causes determining a deposit of fibrin in the line of anastomosis, and their removal. Occasionally after transplantation of veins as a substitute for arteries, late obliteration may occur, hence this procedure seems to be a little less safe than the direct anastomosis of artery with artery. Carrel finds it possible, however, to preserve the vitality of extirpated arteries in Locke's solution at low

temperature for some days or weeks, so that good results can be obtained after transplantation, though marked histologic changes take place. Other methods have been less successful. It is not always true, moreover, that the transplanted vessel must be from the same species of animal, but the success is greatest when the species are most closely related. Experiments with transplantation of various whole organs, such as the kidney and spleen, with re-establishment of their circulation by vascular anastomosis, have also been successful and transplanted kidneys have functionated normally. In case of glands like the thyroid, parathyroid and ovaries, the re-establishment of the circulation by anastomosis is hardly necessary, though in case of the ovary it might be advantageous. In heterotransplantation of the intestines the difficulty is to avoid infection which caused the failure of both of Carrel's experiments of this nature. Heterotransplantation of rather extensive anatomic regions such as the ear and scalp, with their artery and vein has been successfully done in a dog, and Carrel has succeeded in transplanting a leg from one dog to another. The difficulties here are chiefly surgical, and he says if further experiments in this line sufficiently demonstrate that the functions of the transplanted limb are re-established, it may be permissible to try this operation in a suitable case on man. In a general way, however, it is necessary to emphasize that even a method that gives excellent results on animals must not be directly applied on man. There are marked anatomic and physiologic differences between the human tissues and organs and those of the dog and cat, and the methods should be modified accordingly. The experiments he records have been performed within the past two years and it is too soon to tell what may be their practical value.

Physiological Aspects of Bloodvessel Surgery. C. C. GUTHRIE, St. Louis. *Journal of the American Medical Association*, November 14, 1908.

Guthrie describes the technic and results of his experiments in the union of blood vessels. Essentially, the methods are the same as those of other successful investigators, viz., gentle handling of the vessel, with protection from drying, smooth approximation of the intimal surfaces and fixation by needles and thread in proportion to the size of the vessels. The exposed vessel is occluded by properly guarded forceps, the edges to be sutured are cut smoothly with small, sharp scissors, excess of blood is stripped out with the fingers, and absorbed with a soft, dry sponge, the loose connective tissue coat is snipped off and to prevent drying the vessel is coated inside and out with paraffin oil. Two or more ligatures are then passed through corresponding points on the circumferential margins of the two ends of the vessel and tied, thus approximating the cut surfaces. The walls are then further united by a continuous suture encircling the point of union, each stitch passing through the intima on either side a little way from the cut edge. To facilitate handling and to aid in restraining coagulation, the threads are kept in paraffin oil. The chief difference in the methods with arteries and veins is that in arteries the stitches are placed closer together than in veins. The needles for small or medium-sized vessels are No. 16 cambrics; the thread is one of the six component strands of Chinese twist silk. On restoring the circulation, some hemorrhage will occur from the needle holes, but this is stopped as a rule after compression of the point of union for a minute or two, by the deposit of fibrin in the holes. There is probably more or less clotting inside the vessels in all cases after the operation, but unless there is some gross fault, the circulation is usually restored. The smaller the vessel the greater the chance of failure; vessels of less than 2 mm. are less easily handled than larger ones. Excessive traction is to be avoided, if the gap is too wide, the most feasible method perhaps, is to interpose a suitable segment of some non-essential vein between the ends of the divided vessel. Other transplantations may also be used, and have given good functional results. Following up this line of work, Guthrie has applied the same principles to the transplantation of tissues and the results have so far demonstrated that the transplantation of limbs is feasible in dogs. He also transplanted dogs' heads with preservation of cerebral and bul-

bar function. The question of the injurious action of the so-called "physiologic solutions" employed in lengthy experiments of this nature is discussed. It is possible to transplant the legs or heads of dogs so quickly that perfusion is unnecessary. In the case of the kidneys, however, this factor has seemed to him a bar to permanent success, and he is now investigating the influence of various solutions used for perfusion, as well as the effect of clamping the arteries on the kidneys. Thus far he has used cats, with striking but apparently not specially favorable results. Guthrie has also experimented with artificial hyperemia of the thyroid by reversing the circulation in the veins, producing a maximum arterial and venous hyperemia.

Condition of the Peripheral Bloodvessels in Shock.

M. G. SEELIG and E. P. LYON. *Journal American Medical Association*, January 2, 1909.

Seelig and Lyon, after reviewing the various theories of shock, give an account of experiments undertaken by themselves to determine whether the peripheral vessels are contracted or dilated during the time the pressure is low in the larger more centrally located vessels, such as the carotids. They studied visually the retinal vessels and measured the outflow of the temporal vein. They found that the proportional rate of flow from the vein during shock was more rapid after division of the sciatic, thus showing that the section of the nerve caused vasodilatation of the vessels of the leg, just as it does in an unshocked animal. This dilatation, however, is proportionately greater than it is in a normal animal and the difference must be accounted for assuming that in the shocked animal, before division of the sciatic which contains the chief vasomotor nerves of the leg, the vessels are more contracted than they are in the normal animal. That is to say, that in shock, with the vasomotor impulses unimpaired, the peripheral vessels are more contracted than normally. In the retina, where the uninjured vessels are open to inspection, the indications were the same. The ophthalmic examinations were made for the authors by Dr. John Green, Jr., who was requested to examine the fundi of the dog's eyes, before and after the shock, and to note carefully the size of the vessels. In every instance he reported that the vessels showed a marked degree of contraction after the animal was in shock, contracting down to one-third to one-half their size before shock. The authors do not claim to offer any explanation of the causes of shock, but simply to demonstrate that the peripheral vessels are contracted, which necessarily implies that shock can not be due to exhaustion of the vasomotor centers. If their results are confirmed, then the doctrine that shock is due to vasomotor exhaustion must be revised.

Cranial Technic. FRANK HARTLEY, New York. *Journal American Medical Association*, January 9, 1909.

Hartley enumerates the following as the prime requisites for avoiding the dangers of shock and sepsis in operations on the brain: 1. Instruments which will open the skull quickly over any desired area and to any extent. These are the motor, saw and guard, osteotome, drill, fraise and measure. 2. A method of craniocerebral topography permitting an accurate exposure of the desired area. Chipault's is the best method, adapted to the skull of all ages, races or individual peculiarities. 3. Osteoplastic flaps cut so that they will expose the desired area in the easiest manner. 4. The replacing of the bone flap in every possible case or the covering the defect with an accurately fitting foreign material (celluloid or aluminum). He prefers autoplasty when possible. 5. The most perfect hemostasis in the preliminary as well as in the final steps of the operation. The operation he divides into two steps, the first concerned only with the skull, the final with the dura and brain. All drugs should be given up several days before operating, and a record of pulse rate and blood pressure should be taken twenty-four hours before operation. The patient's head is raised on the table between 15 and 30 degrees, which Hartley has found sufficient to stop venous bleeding and lower arterial pressure. He has not been able to compare the effects of Crile's rubber suit and carotid compression or of Dawbarn's sequestration-anemia with

this, but if they will improve the arterial pressure better than elevation and with no greater danger of inducing sudden syncope, he will certainly use them. During the operation he would have the blood pressure recorded by the anesthetist by a sphygmomanometer on the arm, as a sudden fall will warn the operator of any impending sudden collapse, and will probably enable us to avoid the 25 per cent. of sudden deaths following prolonged operations. The details of the two steps of the operation are given and the necessity of careful hemostasis during the second stage emphasized, as well as the importance of avoiding infection of the lateral ventricles. Possible later complications are: 1. Shock, in prolonged operations with hemorrhage or after large tumors have been removed and the cerebral statistics disturbed by the space left. In such case the acute cerebral edema of von Bergmann occurs. To avoid this Hartley tampons and gives counter-pressure through the flap. 2. Hyperpyrexia: This occurs after both severe and moderate handling of the brain, especially if the ventricles have been opened, and is due to toxicity of the neoplasm secretion, infection or irritation of thermic centers in the bulb. 3. Encephalomeningitis may be due to injury or to infection from the patient's blood or without. It usually appears during the first month after operation, coming on slowly with localized convulsions, contractures, paralyses, somnolence, mental torpor or delirium. 4. Hernia may be present at the time of operation as a tumor of the base or as a voluminous tumor of the centrum ovale, or at a later period in the form of encephalitis.

Reactions of the Labyrinth and Their Significance in the Diagnosis of Suppurative Labyrinthitis. G. E. DAVIS, New York. *Journal of the American Medical Association*, November 21, 1908.

Davis says that since 1905 it has been possible to make an absolute diagnosis of complete destruction of the labyrinth from suppurative labyrinthitis, and he enumerates and describes the signs and symptoms by which this can be done, according to their relative diagnostic importance, as follows: 1. Total deafness of sudden onset. This symptom is important, but has been somewhat uncertain because of the difficulty in excluding hearing by the other ear. Barany, however, has constructed an apparatus with which one can definitely determine total deafness on one side. It consists of a hollow conical speculum traversed by two tubes—one for the inflow and the other for the outflow of water—and a third tube for forcing air with the water. With this, great noises can be produced in the sound ear while the other remains totally deaf, but when used on a normal person it does not interfere with hearing in the opposite ear. 2. Intense vertigo of sudden onset, lasting from two to five days on the average, and sometimes of such severity as to make the patient hold on to objects to prevent falling. It may also be accompanied with nausea and vomiting. 3. Rotary nystagmus to the sound side. This symptom is important, especially when combined with nystagmus and vertigo. It is best observed by having the patient look straight ahead and elevating the upper lid. It is marked and observable in all positions of the bulb and lasts, as a rule, for a few weeks, when it gradually disappears. 4. Non-irritability of the labyrinth to thermal irritation (caloric test). Syringing the ear in normal persons with cold water causes rotary nystagmus to the opposite side, while syringing with water ten or more degrees warmer than the body temperature causes rotation to the same side. When, with the previously described symptoms, we find this lacking, we have an important and negative sign of acute destruction of the labyrinth. 5. Reactions by turning. According to Barany, normal persons, after being turned ten times in the revolving chair to one side with the head bent forward 90 degrees, will show rotary nystagmus to the opposite side, lasting on the average from 18 to 20 seconds—so-called after-nystagmus. In acute and latent cases of one-sided labyrinth destruction we find the duration of the after-nystagmus reduced to 8 seconds or less. 6. Galvanic reaction. By applying the cathode to the ear directly in front of the tragus and the anode in the patient's hand, a rotary nystagmus to the same side will occur with a current of from two to seven milliamperes, and with the poles reversed

to the opposite side. In case of labyrinth destruction a current of from ten to sixteen milliamperes is required to cause this reaction. 7. Disturbances of equilibrium. In acute cases of one-sided labyrinth suppuration, as has been pointed out by Alexander, Barany and others, there are marked and typical disturbances of equilibrium, the patient tending to fall toward the diseased side. The symptom gradually diminishes after the first few days, but never entirely disappears. In cases of acute labyrinth suppuration there are always more or less symptoms of meningitis, such as fever, diffuse headaches, sensitiveness to percussion and stiffness at the back of the neck, and not infrequently more or less choked disc. In cases of acute labyrinth suppuration it is better and safer to remove the labyrinth at the time of the radical operation, although the facial canal remains intact, as the radical operation alone enhances the pathologic conditions in the labyrinth and greatly increases the danger of meningitis. Unless one can remove the labyrinth, no operation is advisable, in Davis' opinion, in preference to the radical operation alone. The best method of removing the labyrinth is to make wide exposures of the sinus and meninges, uniting the middle and posterior fossæ as advised and practiced by Alexander, who also incises the dura in both fossæ to insure better drainage.

The Surgery of the Auditory Labyrinth. CHARLES M. STEWART. *Canadian Journal of Medicine and Surgery*. January, 1909.

Within recent years, the knowledge of the surgery of the auditory labyrinth has been increased by Jansen, J. D. Richards of New York, and Richard Lake of London.

Attention to disease of the labyrinth is most important for a great many mastoid cases have turned out fatally because the surgeon has neglected to search for labyrinthine disease when he was doing the radical mastoid operation.

The vestibule is the seat of the greatest pathological activity. The infection takes place either from the foramen ovale or from an erosion in the external semicircular canal as it lies in the inner wall of the aditus. Death in labyrinthitis is due to intracranial complications—either meningitis or abscess of the brain. The tract of infection is usually along the filaments of the auditory nerve, and in this way the subarachnoid space becomes infected. Bezold has estimated that labyrinthitis occurs in 1-500 cases of chronic suppuration of the middle ear.

It is impossible to definitely diagnose labyrinthitis before operation. Symptoms pointing to labyrinthine involvement may be well marked and yet at the time of the radical mastoid operation, the labyrinth is found perfectly intact. It is a serious matter to explore a healthy labyrinth in an infected area, such as in a mastoid operation. When doing a radical mastoid operation, the external wall of the labyrinth should always be carefully searched for fistulæ. The external semicircular canal just opposite the aditus is a common seat of a fistulous opening.

Symptoms which are useful in labyrinthine diagnosis are nystagmus, vertigo and disturbances in equilibrium.

The patient is never conscious of nystagmus. Pressure on the stapes will produce the condition if the labyrinth is healthy. It has been found when syringing the middle ear with cold water, the eyes turn to the opposite side from the disease, and with warm water to the same side as the disease. In gross lesions of the labyrinth it is impossible to produce nystagmus with heat or cold. The vertigo is produced by the abnormal stimulation to the specialized end organs in the macule and cristæ of the vestibule and semicircular canals. Cochlear lesions give rise to deafness. Romberg's sign is usually present, the patient walks with the feet wide apart, sways considerably and has a tendency to go to the affected side. Facial paralysis occurring in a case of suppurative otitis media is not uncommonly due to destructive changes in the aqueduct of Fallopius.

Lumbar Puncture in Otology. SEYMOUR OPPENHEIMER. *New York Medical Journal*. December, 1908.

In the great majority of aural affections seen by the otologist, the admissibility of lumbar puncture as a diagnostic aid need not be considered. That lumbar puncture as a diagnostic agent in some of the intracranial compli-

cations of suppurative otitis has a decided value has been repeatedly demonstrated, not only in greatly aiding in the recognition of a meningitis, where it gives positive evidence of the condition present, but it is of value in a negative aspect. The negative aspect indicates the absence of meningitis of any extent and thus eliminates this factor from the conditions suspected of being present.

Quantitatively one may obtain some evidence of the presence of increased intracranial pressure by an excessive amount of fluid escaping through the canula employed in making the puncture, but this evidence is of little or no value in the conditions met with as aural complications, although some value should be attached to the escape of the fluid under apparently high pressure as undoubtedly indicating increased tension.

In the distinctive diagnosis of a possible brain tumor from that of a brain abscess, or extradural collection of pus limited in extent and thus circumscribed, little or no information can be obtained and the withdrawn fluid is practically the same in both these conditions. As long as the pus collection, irrespective of its location, remains circumscribed, and the arachnoid space is not invaded by the purulent process, practically nothing can be gained as an added diagnostic feature by lumbar puncture, but where the diagnosis from other conditions seems difficult, one may gain some added negative information, as the fluid in these two conditions is frequently released under abnormally high pressure and may also be more abundant than usual.

The Diagnostic Value of Cutaneous Hyperalgesia (Head Zones) in Abdominal Disease. C. A. ELSBERG and H. NEUHOF, New York. *American Journal of the Medical Sciences*, November, 1908.

After a careful study of a large series of cases, in all of which their observations were confirmed by operation findings, the authors conclude as follows:

1. We agree in the main with the statements of Head, that there are present, in many affections of the abdominal viscera, constant and definite areas or zones or cutaneous hyperalgesia.

2. These zones may vary somewhat in extent and in outline, but they have a characteristic location.

3. The presence of a characteristic zone is an evidence of an affection of the corresponding abdominal viscus, although not of necessity the affection which is causing the symptoms.

4. The zones are present in a large percentage of patients with acute affections of the appendix, of the gall-bladder, of the uterine adnexa, and are of considerable value in the diagnosis of these acute affections.

5. Zones are frequently present in acute disease of the other abdominal viscera, and when present aid in making the correct diagnosis.

6. Cutaneous hyperalgesia may appear early in acute abdominal disease. Its presence is no index of the gravity of the lesion. Its sudden disappearance may be of grave significance.

7. In the absence of all other localizing signs or symptoms, the zone may indicate the organ that is affected. In most instances, however, it must not be used to make the diagnosis, but only as a diagnostic aid, to substantiate conclusions reached from a consideration of all the symptoms and signs.

Obstetrical Paralysis. A Preliminary Report of Two Cases Treated by Nerve Dissociation. KARL OSTERHAUS, Norfolk. *New York Medical Journal*, November 7, 1908.

Acting upon the principle of making the scar tissue serve as a guide for the regeneration of nerve fibrils, the author performed the following operation upon two cases of obstetrical paralysis. After exposing the plexus, the nerve sheaths are exposed above and below the junction for a considerable distance; the fibers constricted by the cicatricial tissue are then dissociated by a small sharp tenotome. The nerves are then loosely wrapped in Cargile membrane and the wound is closed. In both patients the results were both rapid and highly satisfactory.

Hypertrophy of the Female Mamma. G. T. BEATSON, Glasgow. *Edinburgh Medical Journal*, December, 1908.

Beatson reports one case of this rather rare lesion. The hypertrophy began at puberty and was associated with pain and discomfort in the breast. At the age of 19, the patient menstruated twice, but only very slightly; since then there has been amenorrhea. Eighteen years ago an adenoma of the left breast was removed. Owing to the constant aching pain the patient sought surgical relief; it was thought advisable to remove at first only one breast, for the reason that occasionally it has been noted that removal of one causes diminution in size of the other. As no such improvement took place, the other breast was also removed later. On examination the hypertrophy was found to be due to an increase in the fat and fibrous tissue.

Most cases of hypertrophy of the female mamma begin at puberty and are associated with some sexual irregularity, usually amenorrhea. Some cases are influenced by the use of iodine and thyroid extract, but probably the best course to pursue is amputation. It is advisable at first to remove only one breast in order to note the effect upon the other.

[Although no pelvic examination is recorded in the recital of this case, it is well to state that in the majority of instances of this lesion there is usually associated an infantile uterus.]

A Case of Sigmoid Kidney Operated Upon (*Ein operativ behandelter Fall von Ren Sigmoides*). WM. WEIBEL, Vienna. *Wiener Klinische Wochenschrift*, November 19, 1908.

A woman of 35 had suffered for ten years with weekly attacks of pain in the right side of the abdomen radiating downward. On palpation a mass was felt beneath the free border of the ribs, round, hard, about the size of a goose egg, and but slightly movable; it was attached by what appeared to be a pedicle, which proceeded from its upper margin. The diagnosis was made of tumor of a prolapsed kidney. At the operation this proved to be a kidney whose hilum was turned outward; it was firmly attached by kidney substance at its upper margin to a normally situated right kidney, which proved to be the pedicle above described; the blood vessels of the lower kidney arose also from the right side of the aorta, but the ureter proceeded over to the left side, passed beneath the sigmoid flexure and entered the left half of the bladder in the normal situation. The kidney on the left side was absent. Acting upon the theory and the attacks of pain were due to pressure by the misplaced kidney on the surrounding organs, the author decided to remove it. This was done with considerable difficulty owing to the intimate union with the normally situated kidney. This lesion is a congenital anomaly. Only two cases have been previously reported.

The Value of Turpentine in Gall-Stone Operations. GASKOIN WRIGHT, Nablus, Palestine. *British Medical Journal*, December 19, 1908.

On a woman of 54, who had been suffering for several months with fever and suppuration of the gall-bladder, cholecystostomy was performed, and the gall-bladder, which was full of stones, was cleared out. A large mass of impacted stones was found lying apparently in the ductus choledochus, but, on account of the adhesions round the gall-bladder, etc., the duct could not be properly exposed. A spoon was passed three inches or so through the cystic duct, but the stones could not be removed, and they were so hard that it was impossible to break up the mass or to make any impression upon it.

A piece of indiarubber tubing was fixed on a small glass syringe and 1 drachm of turpentine injected through the cystic duct on to the surface of the impaction. In a few minutes Wright was able to break up the impaction, and in about ten minutes all the stones were removed from the duct. The patient made an uninterrupted recovery, the opening in the gall-bladder healing up in about six weeks.

From his experience in this case it seems to Wright that the habitual use of turpentine in connection with cases of choledochotomy in which there is the slightest difficulty in removing the bile concretions might materially lessen the risks of the operation.

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INTESTINAL RESECTION; PRELIMINARY REPORT OF A SIMPLIFIED METHOD.

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For a number of years I have been treating the stump in appendicectomy by simple ligation and carbolic acid cauterization of the mucosa, a method which I first saw practised in the early nineties by Dr. W. F. Fluhrer. After a test of several years in some hundreds of cases, I published a paper on the subject in the *Medical News*, November 28, 1903, and now after another five years, with abundant experience, I see no reason to change the favorable views I then held.

M. J. Seelig, of St. Louis, in an exhaustive study of this matter has demonstrated (*Annals of Surgery*, Vol. 40, p. 710), both by argument and by illustrations of microscopic sections, that the mucosa is crushed and crowded away from the ligature both proximally and distally, in such a manner as to seal effectually the undisinfected lumen of the organ.

On March 22, 1905, I performed a pylorectomy, making use of Maury's twine triangular stitch for the gastro-jejunostomy, and the patient's condition being such that speed had become a most important element, I treated the stump of the rather short duodenum by a simple ligation and carbolization. The Maury stitch did not cut through, so the stomach remained completely shut off and the patient died, with symptoms like those of uremia, eight days later. At autopsy there was no peritonitis and the duodenal stump looked perfectly healthy.

CASE I.—October 21, 1908, I operated on J. B., a man 46 years of age, who gave a history of symptoms indicating eight years of pyloric stenosis. Pylorectomy for chronic ulcer was done, the gastro-jejunostomy being accomplished by suture. The gastric stump—if I may call it so—was closed by double suture in the usual manner. The short duodenal stump was ligated with heavy silk, using great constricting force. The half-inch free stump of duodenum was well cauterized with 95% phenol,

and the long ends of the ligature left in the upper angle of the abdominal wound alongside of a small cigarette drain.

Healing was ideal, the ligature coming away on the nineteenth day, and the patient was discharged with wound completely healed twenty-one days after operation.

CASE II.—This patient, a woman of 43, was operated upon by the same technic, and was exhibited at a stated clinical conference at the Mt. Sinai Hospital on December 17, 1908, twenty-one days after operation. Convalescence had been ideal but the ligature had not yet come away, though the remainder of the wound was soundly healed and the patient had been up and about for some days and was enjoying the usual hospital diet. The specimen proved to be an indurated ulcer with cancerous degeneration. The ligature came away in seven weeks and the sinus at once closed.

CASE III.—On November 18, 1908, a woman 72 years old, entered the hospital in the last stages of intestinal obstruction. Section with the aid of local anesthesia revealed hernia through a hole in the omentum, a loop of about eighteen inches of ileum being strangulated and its mesentery thrombosed so that repeated incisions across the vessels were not followed by hemorrhage. There was distension, and the abdomen was filled with bloody serum. Resection of about thirty inches of intestine was performed, the stoma being side-to-side, in the direction of normal peristalsis, and the ends treated by ligation and carbolization instead of invagination and suture. Death occurred in about twelve hours. The post-mortem examination showed neither leakage nor septic reaction at the stump.

CASE IV.—B. S., a man 22 years of age was operated upon December 17, 1908, for tumor of the ileo-cecal region. The mass was movable and the size of a fist. Numerous glands in mesentery. The root of the appendix was implicated, but the greater part of the tumor was in the cecal wall and there was considerable narrowing of ileo-cecal orifice. The method was used here in large and small intestine, the stoma being made side-to-side between

the ileum and the first part of the transverse colon. The ends of the strings were left out of the wound and a small short drain was inserted through the peritoneum. Convalescence was absolutely without constitutional reaction. Five days after operation the first dressing was changed. The drain was removed and was followed by about two drachms of pus. Two days later there was nothing left but a slightly discharging sinus, the ligatures being cast off twelve days after operation.

In this case the operation by any other method would have been quite difficult. End-to-end anastomosis, especially, would have been hard to perform owing to an exceptionally thick mesocolon which would have made trouble at the mesenteric border of the anastomosis. By this new method the operation was extremely rapid and simple.

CASE V.—December 25, 1908, a woman, 35 years old, had had increasing signs of intestinal obstruc-



Fig. 1. Clamps and Ligatures in Place, Knots Not Yet Tightened.

tion for four days, with distension, visible coils of intestine, rapid pulse and fecal vomiting. On admission to the hospital her condition was extremely poor and immediate operation had to be performed.

On careful examination in anesthesia, Dr. Moschcowitz, who happened to be present, discovered a very slight fulness in the region of the right femoral ring. Reasoning that we were probably dealing with strangulation of the femoral hernia, a right lower quadrant abdominal section was made between the fibers of the rectus, and a coil of ileum was found adherent to the internal orifice of the femoral canal. A second incision over the hernia revealed a sac containing foul bloody fluid. By combined manipulation, the intestine was freed and drawn into the abdominal cavity. It proved to be a Littre's hernia with complete gangrene of all the walls of the intestine. There was a considerable amount of free fluid in the abdominal cavity. The patient's condition was very poor and we had to work quickly. Resection was performed after the method described, one of the ligatures being cut

short and dropped back into the abdomen, while the other was drawn through the femoral canal alongside of a cigarette drain which led down to the anastomosis. The abdominal wound was completely closed by suture. Infection of the wounds took



Fig. 2. Knots Tightened and Resection Made.

place, as might have been expected in the presence of gangrenous infection, and in addition right-sided pneumonia complicated the convalescence. After the first twenty-four hours, however, the patient was at no time in a critical condition. The ligature was discharged on the tenth day, and with it came the little free funnel of intestine. The other ligature was never "heard from."

CASE VI.—M. P., a man about 40 years of age, had been operated upon twice for bleeding from the rectum, which, we believed, originated in the upper portion of his intestinal tract. At the first operation, about two and one-half years ago, the gall-bladder was found adherent to an ulcer of the duodenum near the pylorus. It was free and a pyloroplasty performed. About a year later, on account of further hemorrhages, gastro-jejunostomy was done. In January, 1909, he entered the service of Dr. Rudisch at Mt. Sinai Hospital, almost exsan-

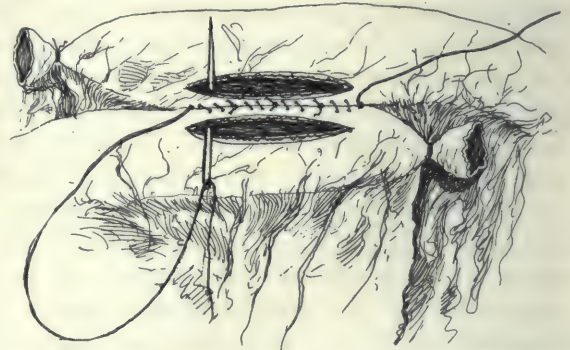


Fig. 3. First Row of Lembert Sutures Tied. Stonia Openings Made. First Through and Through Suture Being Inserted.

guinated from the loss of blood by rectum, his hemoglobin having reached the low point of 18%. Operation at this time seemed to offer too great a risk, so, at my request, transfusion of blood was

performed by Dr. Elsberg, on January 21, 1909, and the hemoglobin percentage was raised to 47. Thinking that the blood had come from the pyloric region of the duodenum, and there being no method to my knowledge by which the exact location of the ulcer could have been determined, I performed a pylorotomy the following day, closing the duodenal stump by ligature. I noted that the gastro-jejunosotomy opening was rather small, barely admitting the tip of the finger, and that probably in consequence of some narrowing of the intestine at this point the duodenum had become tremendously dilated. Thinking that the patient's condition would not permit of another gastro-enterostomy, and that the original one would prove sufficient for the passage of fluids, nothing except pylorotomy was done. Two days after the operation, there was profuse leakage of duodenal fluid, mostly clear, probably pancreatic. The patient continued to have tarry stools. I believed, and still believe, that on account of the haste which appeared necessary

ligature, still I feel that the failure was not due to the method but to faulty technic which permitted the wall of the intestine to be invaded, perhaps even pierced by the ligature passer.

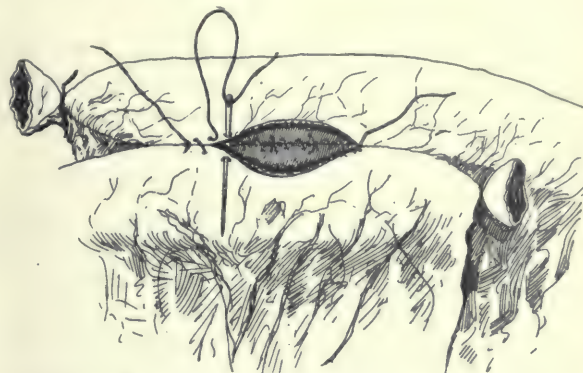


Fig. 5. Third Row of Sutures Being Inserted, Continuous With Those in Fig. 4 Through Entire Wall.

It would be unwise, without much further experience, to recommend the operation here described as a routine procedure in cases in which speed is not important. One can but feel, however, that a ligature of this sort is much safer in preventing leakage than any suture can be, and that lateral intestinal anastomosis is safer than end-to-end, because of the danger of leakage at the mesenteric border. It is well known that sutures will tear out under the stress of continued distension; a ligature obviously cannot give way until the stump is ready to be cast off. By this time (8 to 14 days after the operation), firm adhesion should have taken place.

The method will probably prove most satisfactory in dealing with resections of small intestine for



Fig. 4. Completed Row of Sutures, Through Entire Wall of Gut.

at the time of the pylorotomy, the ligature needle invaded the wall of the duodenum, and that the silk in consequence did not completely encircle the intestine, but probably passed through the duodenal wall. There was considerable vomiting. Twelve days after the operation I once more opened the abdomen and made a quick and ample gastro-enterostomy, distal to the first one. The patient, however, continued to lose fluid through the duodenal leak and his condition became rapidly worse. On February 8th, Dr. Elsberg freed the duodenum, closed it by suture and fastened it down to the surface of the liver, thus stopping the leak. Two days later, however, the patient died.

Post-mortem examination by Dr. Libman showed recent peritonitis with the presence of bile in the abdominal cavity. There had been no peritonitis at the time of the second gastro-enterostomy. There was also a jejunal ulcer opposite the original gastro-intestinal stoma, which was probably the cause of the hemorrhages.

While this case is reported as a failure of the



Fig. 6. Anastomosis Completed, Showing Final Row of Lembert Sutures.

acute destructive processes, such as gangrene of the gut. It will, perhaps, prove less satisfactory in dealing with the duodenal stump in pylorotomy, for the reason that we have such a large portion of the visceral wall not covered by peritoneum.

With the exception of Case III, an old woman already moribund, and Case VI, in which I believe there was a technical error, all the patients operated upon by this method have shown a remarkable freedom from shock, with rapid and uneventful recovery.

To those who may apply the method, I will give but one warning, viz., tie the ligature tight enough to crush the mucosa, and sterilize the stump with pure carbolic acid, not followed by alcohol.

This communication is, as its title indicates, a preliminary one, and certain changes of technic and modifications of the application of the method may become necessary. Then, too, it will be interesting to note the anatomical appearances of an anastomosis of this kind considerable time after the operation. For this purpose it will be necessary to make animal experiments. Dr. S. Wyllis Bandler has operated upon a number of dogs by this method and is at present engaged in a study of his cases. I regret to say that the work is not yet ready for publication, although of five dogs experimented upon, all made operative recoveries. The work was started rather late so that the time for examination of the specimens has not yet arrived. Then, too, it must be remembered that intestinal work in dogs is very misleading on account of the extreme resisting power of these animals for operations on the gastro-intestinal tract. Pigs would undoubtedly be much better for this class of experimental surgery.

After the completion of this paper, I found an article by Wölfler and Schloffer in Kocher's *Encyklopädie der Gesamten Chirurgie*, edition of 1903, p. 87, in which under the Billroth operation of pylorotomy, it is stated that the duodenal stump may be treated by crushing with a clamp, ligation and thermo-cautery, the little stump being buried with a purse-string suture.

This is the only reference to any operation remotely resembling the one here described which a cursory glance through the literature has afforded.

115 EAST SEVENTY-THIRD STREET.

"MIXED NARCOSIS."

When giving ether or chloroform alone most of the reflexes must be abolished in order to maintain the proper degree of anesthesia necessary for the successful issue of the operation. When morphin is administered these reflexes can be allowed to remain, and yet the patient will be perfectly quiet.—

JAMES T. GWATHMEY in the *J. A. M. A.*

SIGMOIDITIS AND PERISIGMOIDITIS.*

JAMES P. TUTTLE, M.D.

NEW YORK CITY.

The fact that each portion of the digestive tract has a distinct anatomical conformation indicates for each a distinct physiological function; and we may infer from this that they may each be attacked by special diseases, or that the same pathological process will produce different effects in the separate divisions. Pathologically an inflammation, ulceration, or neoplasm may be the same whatever portion is attacked, but clinically they are very different. It is necessary, therefore, to study each part separately. The physiological and anatomical conformations and relations of the sigmoid flexure render it predisposed to all diseases arising from the intestinal tract, and also to those arising from other pelvic organs. Being the true fecal reservoir, and retaining as it does the fecal matter, longer than any other portion of the intestinal tract, it is practically subject to infection from whatever pathological cause is active in the upper portion of the tract, and also to injury and irritation from every foreign body, or irritating substance that passes through the bowel. It is peculiarly susceptible, therefore, to specific ulcerations, such as typhoid, tubercular, and dysenteric; but as such ulceration is always a part of a general involvement of the colon in these conditions, it is not necessary to consider them as producing a typical sigmoiditis, and we shall not discuss them at the present time. Occasionally one sees localized tubercular ulceration of the sigmoid; but this is very rare, and presents no symptoms different from other ulcerations. The writer has frequently seen dysenteric ulcers of the rectum and lower loops of the sigmoid with the upper part of the latter organ perfectly healthy. These belong to the type of rectal dysentery in which the disease has extended upwards. What I wish to call attention to at present is the broad subject of inflammation in and around the sigmoid flexure, viz:

SIGMOIDITIS AND PERISIGMOIDITIS

The term sigmoiditis was first employed by Mayor, of Geneva, in 1893; but the condition itself was first described as an entity by our own noted citizen, Dr. Joseph M. Mathews, of Louisville, Ky., (*Diseases of the Rectum, Anus and Sigmoid Flexure*, 1892).

Trastour, in a most instructive article on "passive dilatation of the sigmoid," describes most accurately

* Read before the Dutchess County Medical Society, January 8, 1909.

the symptoms of an acute type, but does not limit the condition to the sigmoid flexure.

Carpenter, in 1898, used the term frequently, but only to describe the acute and chronic catarrhal types of the disease. We are indebted to the French and German writers, chiefly Catz, Patel, Regnier, Edlephsen, Lejars, Walcha, and Bergman, for our literature upon the clinical aspect of the subject. Recently Byron Robinson, of Chicago, has published (*Medical Standard*, August, 1907, etc.), most elaborate and instructive anatomical and pathological studies of the sigmoid, and its relations. These articles are all well worthy of study, and I am indebted to them for much of my information on the subject. Especially am I indebted to Dr. Robinson's post mortem studies for the explanation of clinical phenomena. Elaborate classifications have been made by these writers, and interesting cases reported to support them; but it will simplify matters to adopt the following classification:

Sigmoiditis: catarrhal, ulcerative, and interstitial.

Perisigmoiditis: primary and secondary.

CATARRHAL SIGMOIDITIS.

Catarrhal sigmoiditis appears in both acute and chronic forms. The acute form has very little to distinguish it from ordinary catarrhal enteritis, involving more or less of the entire colon. It attacks this portion more frequently than others simply because the irritating substances remain in the sigmoid longer than they do elsewhere. It comes on suddenly, with more or less griping pain; some solid, hard or lumpy stools, followed by watery passages, then mucous, with or without blood; usually there is a slight elevation of temperature; generally it follows a period of constipation, or one of irregular diet; there is lack of appetite, but rarely nausea, and scarcely any burning pain in the rectum; there is flatulence, tympanitis over the general abdomen, but flatness and pain over the left iliac region. The condition usually subsides after a saline laxative and restricted diet, and leaves no sequela of importance. Such cases are rarely ever submitted to local examination, and therefore, we have few reports of the proctoscopic appearance. The following case, however, may be taken as a typical example:

Mr. M. (under my care for pruritis), while on a vacation became constipated for two or three days. To overcome this he ate heartily of fruit and took a pill of aloes. The next day he was seized with a severe pain in the lower abdomen, especially on the left side. Bowels moved freely, first hard lumpy

stools, then watery; the next day he had seven or eight movements of almost pure mucus, with flecks of blood. Upon examination, October 10, 1906, temperature 99.2°; pulse, 80; tongue rough; tenderness over left iliac and suprapubic region; percussion slightly tympanitic; anus tender to touch, but not abraded; the rectum was normal except for a little glary mucus at its lower segment. The mucous membrane of the sigmoid flexure at its junction with the rectum showed increased redness, while that higher up was fiery red, and covered in spots with a sort of grayish sprue-like deposit in a bed of mucus; while parts were redder than others and swollen, the rugae being obliterated, I was unable to make out any ulcerations. Stool examination showed no amebae or bacilli dysenteriae. The sigmoid was flushed with saline twice a day, a small quantity of a silver salt was instilled through the sigmoidoscope once a day. In four days the mucous membrane assumed its normal appearance, and the symptoms disappeared, except for the tenderness over the left iliac region, which persisted for about a week.

At times the attacks of this disease are more severe. The patient, after a period of unusual constipation is seized with pain in the left iliac region. This pain, in my experience, is more often a dull aching weight extending through to the back, than the acute agony such as is described by the French writers; the tongue becomes coated and red upon the tip and edges; the complexion becomes muddy; the pulse slightly rapid; there may, or may not be an elevation of the temperature; mental activity is very slow; the patient is inclined to sleep, or at least to rest in a reclining posture; palpation elicits a tenseness of the left rectus muscle; usually a thickening or a tumor in the left iliac fossa, with more or less tenderness on deep pressure. Rectal examination usually shows a *ballooned rectum*, without fecal contents; but to the front, and to one side or the other, one may feel a bosselated swelling, which, if one is not familiar with it, gives the impression of a neoplasm up above. The proctoscope, in such cases, usually demonstrates an acute flexure or angulation of the sigmoid upon the rectum, or between two of its own loops, above which has been arrested a mass of dry, sticky fecal matter. Such cases may be operated on for tumor of the ovary or broad ligament; while a large, overloaded and inflated sigmoid is the true cause of the patient's inconvenience. It is this fact that caused Segond to warn surgeons against too hastily applying the bistoury to swellings in the left inguinal fossa. The cause of all these conditions is the arrest, in the sigmoid, of irritating, putrid, infectious fecal matter. The longer such material remains the drier it becomes and the more irritating. These

patients may even have frequent movements of spurious diarrhea, the current passing around or through a channel in the center of the inspissated mass. The only way to diagnose them accurately is by local examination, with the pneumatic sigmoidoscope. It is easy to understand how such a condition as this may lead to the ulcerative type of sigmoiditis; or how, recurring from time to time, it may lead to a chronic catarrhal condition, with hypertrophy of the cells, plastic exudation in the walls themselves, and eventual contraction of its caliber. The treatment of all these acute types consists in cleaning out the bowel, better with irrigation than with too strong cathartics; limitation of food; ice poultices and rest in bed. I would call attention here to the good effects of peroxide of hydrogen in dissolving and dislocating these fecal masses. If there is blood, mucus and pus in the stools, astringent and antiseptic applications should be made to the parts, either through the sigmoidoscope or a Wales bougie. The attack usually subsides without sequelæ; but may drift into a chronic catarrhal, or even interstitial sigmoiditis, if proper rest, diet, and thorough cleaning of the bowel are not maintained.

CHRONIC CATARRHAL SIGMOIDITIS.

As has been stated, chronic catarrhal sigmoiditis may result from a recurrent acute condition; it may be part of a general catarrhal condition, or it may come on in an insidious manner. The patient is always constipated; he may have one or more thin stools a day, but these stools are accompanied by little hard lumps, surrounded by mucus; many such lumps are left in the sacules or flexures of the sigmoid. In some cases the fluid simply forces a channel through a solid fecal mass in the sigmoid, and, though stools are frequent, there is still impaction in the left iliac and suprapubic region; more or less dulness on percussion of this area; loss of relish for food; palpitation of the heart; the complexion is muddy, sometimes almost jaundiced; there is tired feeling; mental weariness; often periodical discharge of mucus, with or without the crisis of mucous colic. The mental and nervous symptoms accompanying, if not due to this condition, have been well described by Trastour, who believes that it is the preponderating cause in melancholia. I have seen a mild type of the latter in many cases, with persistent fecal stasis, and in two cases have seen acute mania, with delusions or hallucinations subside after the removal of the fecal accumulation from the sigmoid. Some of my readers may be familiar with the following

cases, taken from my book on Diseases of the Anus, Rectum and Pelvic Colon.

Mr. A. T., lawyer, patient of Dr. Frederick Peterson, had been suffering from delusions, hallucinations, and partial unconsciousness for several weeks without any apparent cerebral disease to account for the same. His attack had begun in a diarrhea with severe pains and tenesmus, which continued more or less persistently except when he was under the influence of opiates. This pain was at first referred to the lower portion of the abdomen and rectum. An examination with the pneumatic proctoscope established the presence of an impacted fecal mass in the sigmoid flexure, together with a small ulceration at the juncture of the rectum with the sigmoid. The fecal mass was loosened and removed by the use of solutions of ox-gall and oil, together with pneumatic distention of the bowel. Within a few days the patient's mental condition cleared up and he became perfectly rational.

In these cases the proctoscope shows a pale mucous membrane; the sigmoid flexure is more or less dilated; it is sacculated, and may or may not be acutely flexed. The sigmoid is either blocked with a large fecal mass; or in the sacculi and behind the flexures small masses of fecal matter are found coated with mucus or muco-pus. Frequently one finds small ulcers, due to traumatism or pressure of these small, hard fecal masses.

These are the cases which we all know as mucous or membranous colitis. They may have other initial causes; such as gall-stones, adhesions, chronic appendicitis, etc., but they all act through the production of fecal stasis, irritation of the mucous membrane, infection and toxemia, not always but generally in the sigmoid. They also frequently result in perisigmoiditis or mesosigmoiditis (including diverticulitis)—suppurative, or non-suppurative, according to the type of infection. The treatment consists in removing the cause of the fecal stasis, and then caring for the catarrhal affections.

CHRONIC INTERSTITIAL SIGMOIDITIS.

While it appears that the fecal mass is the sole cause of the tumors or swelling in these cases, it has been observed that the latter do not disappear entirely when the bowels have been emptied; there nearly always remains a thickening, a small sausage shaped swelling in the left inguinal region, which can be easily felt, and which persists for weeks and even months after an inflammation of this kind; it gradually disappears, however, and usually the patient suffers no more from constipation after an attack than previously; the attacks recur, however. Aporti speaks of this type of recurring sigmoiditis,

and has observed one case through three separate attacks. There results a thickening of the walls after these attacks, a loss of suppleness, and a distinct infiltration. It has been described by Catz as a *Chronic Perisigmoiditis*. It is, in fact, an interstitial inflammatory sigmoiditis, without pus and yet almost cicatricial; as Catz says, it may follow an acute sigmoiditis, but more often develops obscurely in the form of chronic obstipation, with symptoms of auto-intoxication. There is always difficulty in defecation; the fecal masses are oval or flat, and may contain more or less pus and blood; the blood is black and mixed with fecal matter as a rule, but sometimes it is bright red; there is a dull pain in the iliac region, which is increased upon the passage of gas or fecal matter; there is more or less inflammation of the serous covering of the bowel, and to this, as well as to toxic absorption, is attributed the rise of temperature, the frequent pulse, and all the symptoms of peritoneal inflammation. The sausage shaped tumor may be felt in the left iliac, or it may rise to any portion of the abdominal cavity; as a rule it is fixed, and is sometimes slightly nodular on its surface. The nodules have been shown to be small diverticulæ, or hernias of the mucous membrane through the muscular coating of the bowel, usually extending into the appendices epiploicæ. It is easy to see how such a condition may be taken for cancer of the sigmoid. The proctoscope shows little or no ulceration, but a stiff, more or less contracted sigmoid, painful upon pressure, and not dilating, either to atmospheric or artificial pressure; there is no granulation or cauliflower-like protrusion into the caliber of the gut, which would suggest adenocarcinoma, nor is there such cicatricial tissue as would indicate specific stricture; at the same time, there is nothing to prove that such cases are not scirrhus, and operation is the only means of absolute diagnosis.

As to the treatment of this type one can say very little if it be not surgical. If one could say positively that it was not malignant, palliative and absorbent treatment would be justified; but when such a serious question is in doubt one cannot waste valuable time with this. The abdomen should be explored at once to learn the nature of the tumor. This done, the condition of the parts will decide whether the diseased area should be excised or an artificial anus made with the view of giving physiological rest.

PERISIGMOIDITIS: DIVERTICULITIS.

Perisigmoiditis, as the name would indicate, consists of an inflammation around the sigmoid, which

may be primary or secondary, suppurating or non-suppurating.

Primary Perisigmoiditis: This type has its origin in the sigmoid itself; it may result from ulcerations, simple or specific, extending through and perforating the wall of the gut; from traumatism or puncture by foreign bodies; from *diverticulæ* which become inflamed through the long arrest and pressure of fecal matter in their cavities, their mouths becoming closed through edema of the mucous membrane. Byron Robinson, who has done such excellent work in the anatomical studies of these conditions, believes that the inflammation in these cases is due to traumatism from the iliac and psoas muscles, upon which the gut often lies; he says that under strong exercise they pound or squeeze the gut wall against the hard fecal mass within, and thus set up irritation of both the peritoneal and mucous surfaces. If these become infected, we have suppurating sigmoiditis, if not, non-suppurating. I attach much importance to this theory, for I have seen the condition follow both horseback and bicycle riding. The inflammation may confine itself to the peritoneum covering the gut and its mesentery, or it may cause adhesions to other organs, thus limiting the mobility of the sigmoid and restricting its peristaltic action. The condition may remain simply inflammatory and adhesive, or it may progress to suppuration. Where no infection occurs the condition resolves itself into a simple localized peritonitis, with pain, rapid pulse, elevation of temperature, etc., all subsiding under physical and physiological rest; but if infection and suppuration take place, we have to deal with suppurating perisigmoiditis, often taken for left sided appendicitis, for they resemble in every way attacks of appendicitis or perityphlitis, only they are upon the left side. Brewer recently reported six cases. (*Journal American Medical Association*, October, 1907) of abscesses occurring upon the left side, and which he believed at first were left sided appendicitis, due to transposition of the viscera; after more careful observation, however, he concluded that they were all probably due to *diverticula* of the sigmoid flexure. Sidney Jones (*Transaction of the Pathological Society*, London, 1858), Loomis (*Transaction Pathological Society*, New York, 1877), Patel, Catz, Eiselberg, and others have reported like cases. Walcha reports a case due to lumbricoid worms; and Bland Sutton to whips of hay in the appendices epiploicæ. The irritation in all these cases is supposed to extend from the mucous membrane to the peritoneum by direct extension or by the appendices. Graser believes it is due entirely to infection of the

mesosigmoid through the diverticula. While this view is not tenable, seeing the abscesses have been found on all surfaces of the gut, it is a fact that most of the perforations of diverticula take place in parts of the intestine covered by cellular tissue, such as the mesosigmoid or epiploicæ. In cases which have been opened the tumor has invariably been found to be of inflammatory nature in the mesosigmoid and due to leakage from the gut through minute diverticulæ. The one thing upon which all agree is present or previous obstipation and fecal stasis in the sigmoid.

Primary suppurating perisigmoiditis comes on as an acute sigmoiditis; there may or may not be a chill; there is tension of the right rectus muscle; constipation; nausea; there may or may not be vomiting; tumor is present in the left iliac, or it may be as high as the umbilicus, it soon becomes fixed; sometimes it may be resonant, owing to the presence of the gut between the abscess and the abdominal wall; sometimes it may be dull all over the suprapubic region, but usually it occupies the left iliac fossa or lumbar region; the temperature may go very high, and the pulse become very rapid. Leucocytosis is present, but it does not always mean pus, as it often occurs as the result of intestinal putrefaction; the countenance is anxious; digital rectal examination reveals nothing; and while the sigmoidoscope showed inflammation and edema over the involved area, in the cases we have observed, the information was of no practical value in the presence of so many evidences of intraabdominal abscesses. It is said by Catz that these abscesses may be absorbed. Personally, I have observed only one that has followed this course. In this one the tumor of the mesosigmoid remained until it was removed after a second acute attack six years later. The old inflammatory focus was apparent. It is possible that they may be encapsulated for long periods; but eventually as a rule they open, either into the gut, upon the skin, or into the peritoneal cavity. I have seen two cases in which the abscess opened, refilled, and opened again into the sigmoid flexure, and the patients seemed to enjoy a fair degree of health excepting at the time when the abscesses were not discharging freely. In one case I was able to insert a probe into the abscess cavity in the mesosigmoid through a sigmoidoscope. These patients would not submit to operation, and I must confess I did not urge it, as I questioned whether it might not result less favorably than the spontaneous openings. Cases in which the abscesses have been evacuated upon the skin surface have nearly all done well. Those which open into the peritoneum all

prove fatal. Two or three cases have been reported in which the diverticulæ have attached themselves and opened into the bladder, causing an enterovesicular fistula. I have never seen one of these cases, nor do I know the eventual outcome of such complications.

The treatment of these cases depends entirely on whether or not the presence of pus has been established. I have only recently seen a case in which there was a tumor in the left iliac fossa, as large as an orange and very hard, coming on after an operation on a uterine adhesion and confinement of the bowels for six days. The operating surgeon thought he had to do with a hematoma, or a non-septic abscess. Local applications to the inguinal region, thorough cleansing of the sigmoid by enemata and rest in bed caused its entire disappearance within two weeks without operation. I say entire disappearance, there still remains a slight thickening in the tissues and immobility of the sigmoid at the point of this plastic deposit. This emphasizes Segond's axiom, already stated, that one should never be in a hurry to open a swelling on the left side. On the other hand, one should not interpret the axiom too literally and take the chance of an abscess bursting into the peritoneal cavity, in the face of such evidences of pus, as chills, elevated temperature, night sweats, sweetish breath, leucocytosis, etc., but should open the abdomen with great care and evacuate the pus if present. The advice to wait until the peritoneal cavity is sealed and the opening can be made through the adherent point is most misleading; if the abscess is in the mesosigmoid, the probabilities are it will never become attached to the wall, and one will always have to pass through the free peritoneal cavity to reach it; even when the abscesses are well outside of the pelvic cavity and up in the abdomen they are seldom adherent to the anterior peritoneum.

When pus is not established the use of ice, followed by creoline poultices, rest in bed, gentle catharsis, and a limited but mixed diet, is the proper course to follow.

Secondary Perisigmoiditis: The sigmoid, through its location in the pelvis, and its ability to rise up and extend into all parts of the abdominal cavity, is subject to inflammation by extension, from almost every abdominal and pelvic organ.

Byron Robinson has shown from seven hundred autopsies that the appendix lies in the pelvis in 48 per cent. of women and 38 per cent. of men; the sigmoid in 75 per cent. of women and 65 per cent.

of men (*The Medical Standard*, 1907, page 357). The intimate anatomical relation of the two organs renders it probable that when one is inflamed the other is likely to be involved in the same process by extension. If such is the case with regard to the appendix how much more so is it true with regard to the reproductive organs in females. The fimbriated extremities of the tubes, the ovaries and the uterus are in constant touch with the sigmoid flexure; and what inflames one organ is almost certain to involve the other in adhesions and in inflammatory exudation.

Abscesses of the ovary or tubes, whether gonorrheic or simple, have been known many times not only to adhere to the sigmoid, but to rupture into this organ. Robinson, in his most excellent paper on "The Relations of the Sigmoid to the Pelvic Organs," reports a case of a young woman with three separate openings into the sigmoid, from a tubular abscess; he says that many deaths are caused in laparotomy by reopening these fistulous tracts and not closing the opening into the sigmoid. He urges careful examination of the sigmoid after all abdominal operations, and says, "I know of no abdominal organ, except the pancreas, to which I have not found the sigmoid adherent." Personally, I have detached the sigmoid from every abdominal organ except the pancreas and liver; and I have had, time and again, to suture tears in the sigmoid after removing adhesions originating sometimes in the sigmoid and sometimes in the other pelvic organs. The chief point of interest in this part of my paper is the fact that we do have many cases of acute and chronic perisigmoiditis, both non-suppurative and suppurative, which resemble, in a large measure, appendicitis on the left side or inflammation of the pelvic organs. These conditions should be carefully distinguished from one another; too great haste in opening a tumor on the left side may result in opening into a passively distended sigmoid, or into an interstitial sigmoiditis. The fact that the tumor is on the right side, or high up in the abdomen does not preclude its sigmoidal origin, for it is the function of the sigmoid to rise into the abdomen whenever it is distended by feces or gas, and it is just this condition that invites inflammation, adhesions and suppuration at whatever site it may occupy. Finally, the history of such attacks of sigmoiditis should always put one on his guard against recurring volvulus, for it has been shown very clearly that these inflammations shorten the mesentery and predispose the patient to acute flexures, angulations or twistings of the gut, which demand the most prompt and radical interference.

SACRAL SUSPENSION OF THE UTERUS— A NEW TECHNIC.

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In an article read before the New York Obstetrical Society in May, 1903, and published in the *Medical Record*, October 24, 1903, I called attention to the importance of the utero-sacral ligaments in the support of the uterus. Experience since that time has served to strengthen my opinion as to their value as factors in the general scheme of uterine support. To comprehend the importance of these ligaments you must appreciate that they come into play when the body is in the upright position, and also remember the anatomical relation between the sacral vertebrae and the posterior

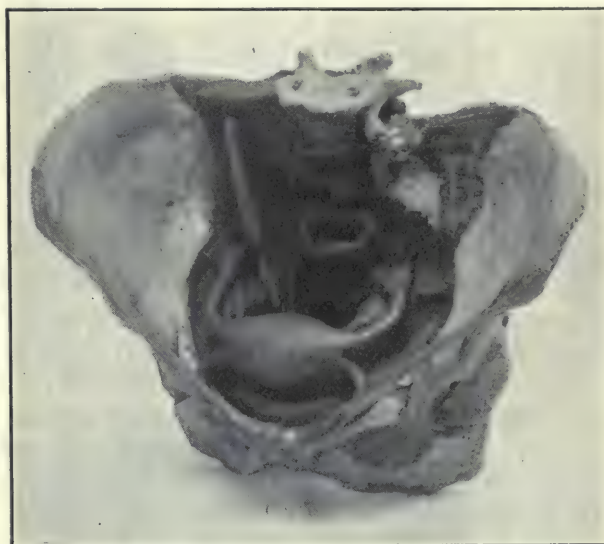


Figure 1.—Showing Normal Relations of Utero-sacral Ligaments and Relation of Ureter. Uterus Pulled Well Forward and Upward.

surface of the uterine body; bearing these points in mind it is easy to realize that in the standing position, the utero-sacral ligaments are practically the only ligaments supporting, or, perhaps, better, hanging the uterus in its normal position. It is also well to remember that in the standing position the patient most needs uterine support. The utero-sacral ligaments may be compared to the ropes of an ordinary swing. These ligaments are attached to the under surface of the sacrum and, spreading fan-like, are adherent to the outer portion of the anterior surface of the first and second sacral vertebrae. The segment of the uterus at the corporo-cervical junction forms the board or seat of the swing. Between the ropes of this swing the rectum passes. If this mental picture carries any comprehension to the reader's mind of the conditions existing, he will

notice that the balance between the weight above and below, or better, in front and behind of the utero-sacral swing, is very much in favor of the fundus. Added to the forward tilt of the fundus, are the guy ropes in the form of the round ligaments, the chief action of which is to keep the fundus forward at all times.

Analyzing the action of the various ligaments which attach the uterus to the bony pelvis, we may briefly summarize as follows: The broad ligaments on either side prevent lateral displacement and aid in uterine support. I believe that the broad ligaments are only secondarily supportive in their action in the erect position. The round ligaments act as guy ropes to the fundus when the bladder is full, when the patient is in the recumbent position and also in the early months of pregnancy. They cannot be considered from their normal course or position as at all supportive in the upright position.

When the utero-sacral ligaments are taken into consideration, their function, when the body is in the upright position, is particularly supportive; in other words, as outlined above, they extend from the uterine body at its junction with the cervix, to the under surface of the only bony structure that is above the uterus when the patient stands. If you will think for a moment of the relation of the symphysis you will remember that it is below the uterus in this position. The attachment of these utero-sacral ligaments is particularly a point of vantage, namely: the second and third sacral vertebrae and the surface which is immediately adjacent thereto. The realization of this anatomical condition was first brought to my mind some ten years ago by a patient whom I saw who had been operated upon for retroversion and prolapse by the late Dr. P. F. Mundé, whose surgical ability was second to none, and whose large experience in this class of cases would certainly have qualified him in the choice of operation. He had performed a ventral fixation. When I saw the patient the fundus was firmly fixed to the anterior abdominal wall about an inch and a half above the symphysis. When the patient stood, the cervix traveled downwards in the arc of a circle, and allowed the rectum and bladder together with it to protrude en masse through the ostium vaginae, showing that while the fixation of the fundus held it firmly to the anterior abdominal wall, the stretching of the utero-sacral ligaments allowed the prolapse of the lower segment of the uterus, together with the cystocele and rectocele; the deformity thereby practically reproducing itself except that the fundus remained adherent in an abnormal position; and the anterior surface of the

uterine body, through the intra-abdominal pressure, compressed the bladder against the superior surface of the symphysis. I have verified this observation many times since.

For the above stated reasons, it is my opinion that any operation looking to the relief of retroversion, retroflexion or either of these combined with prolapse, will fall short of giving the desired relief unless the elasticity and strength of the utero-sacral ligaments are taken into consideration; and I believe also that the reason that almost every anterior operation, that is, every operation on the fundus by fixation or suspension or some form of round ligament operation or broad ligament operation, has had its strong supporters, is the fact that in a large percentage of these cases, the utero-sacral ligaments are not stretched beyond their elastic limit and, therefore, any operation which holds the fundus forward will relieve the condition. Where, how-

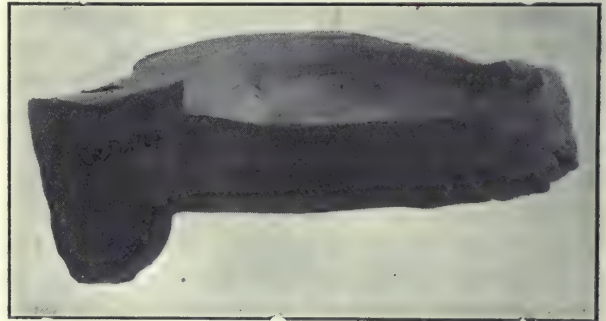


Figure 2.—Showing Relaxed Utero-sacral Ligament.

ever, these ligaments are stretched beyond their elastic limit, any operation which only holds the fundus forward, will fail.

The next logical question that comes to my mind is, are these ligaments anatomically strong enough to fulfill their function, or is the term ligament not a true one, and are they merely bands of fascia covered by folds of the peritoneum? There can be no doubt that they are true ligaments, except where they have been stretched for years by prolapse, but in this condition all the ligaments surrounding the uterus become degenerated in the same way.

The utero-sacral ligaments are composed of fibro-elastic bands with some muscular structure, which are covered in turn by two thicknesses of the peritoneum. They may be easily seen when the abdomen is open, extending from their origin to their insertion; in the recumbent position, as usually seen, they are, of course, relaxed and extend laterally in a semi-circular manner, resembling the web between the thumb and forefinger when these digits are separated.

In making a vaginal examination, if the forefinger is used to lift the cervix well forward, the middle finger passed laterally will distinctly feel these strong fibro-elastic bands on either side of the rectum.

In following out any method of treatment for the relief of retroversion with prolapse, all indicated surgical procedures, such as curettage, repair of the cervix, perineorrhaphy, anterior colporrhaphy, and removal of hemorrhoids, must be per-

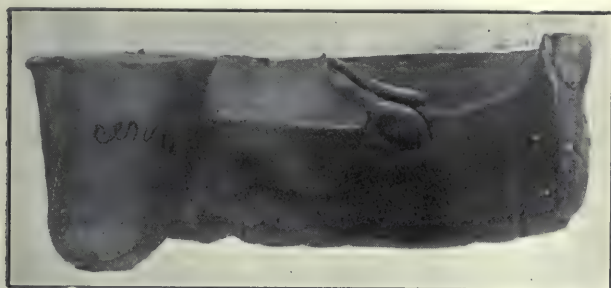


Figure 3.—The Same as Model No. 2 With Ligament Pulled Forward by Sponge Holder.

formed as adjuncts to the operation prior to any intraabdominal work, and it is my experience that this work does not add greatly to the shock, and may be performed at the same time in most cases. The abdominal incision may be the usual median or the semilunar suprapubic. When the abdomen is opened, it is first wise to investigate the condition of the tubes and ovaries, and to do whatever work is necessary to these organs, at the same time breaking up all adhesions which bind the omentum, gut or adnexa to the uterine body. At this point of the operation, in order to facilitate the further procedure, the patient is raised to an extreme Trendelenburg position and the gut is carefully taken out of the pelvis and held above the brim of the true pelvis by pads soaked in normal saline solution. Too great importance cannot be laid upon this step of the operation as coils of gut dropping over the field of operation impede the work very materially.

The contents of the pelvis are then brought fully into view. The fundus is grasped by a double tooth volsellum and held well under the symphysis so as to rotate the uterus on its midtransverse axis, thereby lifting the lower segment. The uterosacral ligaments will then be seen at their insertion into the uterus at the corporo-cervical junction, and may be easily traced as bands extending in a semilunar manner on the sides of the pelvis. One ligament should be grasped in its mid-portion by a long abdominal sponge-holder and drawn well into view, its length and condition inspected, and

the amount of shortening necessary determined. A stitch is then introduced through the uterine wall at the point of juncture of the ligament, this stitch giving a point of traction. Care should be taken to make this stitch embody enough tissue to allow it to be drawn firmly without fear of tearing. By drawing upon this stitch and upon the sponge-holder already in place, the ligament will be brought well into view. It should then be grasped between the finger and thumb, and if the ureter is felt between the folds, it should be pushed aside laterally to avoid being included in the stitch. This accident is not at all liable to occur except in cases where adhesions have distorted the anatomical relations, or where there is very marked relaxation of the ligaments. Having identified the ligament and located the ureter, the next step is the determination of the point at which the ligament should be sewn to the uterine body. To do this, the sponge-holder should be drawn downwards, inward and forward, thereby putting on tension the outer or upper section of the ligament; then, by drawing upon the stitch already in place, a point may easily be determined at which the tension of the ligament will meet the requirement. This point is held by the sponge-holder and the stitch already in place is passed through the ligaments, to include all three layers,—the ligament near its insertion and both layers of the folded end. This brings the fold of the ligament on the inner side of its uterine inser-

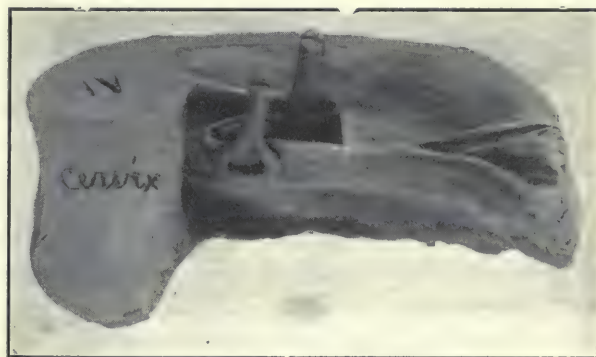


Figure 4.—Ligament Bent on Itself and Held in Position by Sponge Holder and French Clamp.

tion. The middle of that portion of the ligament is grasped between its origin and the stitch above described by a long thin-jawed French clamp. This is placed on the stretch by moving the point of the clamp backward, upward, and slightly outward. The three folds of the ligament will then be clearly seen. The reduplicated fold should be outward to the shortened ligament. A stitch is then placed running through the three layers, beginning at the outer, through the middle and then the inner fold,

at the point farthest from the uterine body. The same procedure is gone through with by a center stitch, midway between one at the junction of the uterine end, and the stitch nearest the sacrum. In placing these stitches too great importance cannot be laid upon the necessity of including all three of the folds of the ligament. A sharp knife is then taken, and the peritoneum covering the three folds is sacrificed. The next step is the taking of a fine catgut suture on a small needle and overhanding these three layers from end to end of the reduplication. This procedure is followed on the opposite side and the operation is completed.

For convenience of description the ligaments may be divided into three parts: First, the sacral or fan-like part—is fibrous and does not stretch, and forms the sacral attachment.

Second, the middle third—is the weakest portion and does stretch.

Third, the uterine third, where most of the fibro-elastic and muscular tissue is found, is strong and well developed.

In this operation the stretched middle third is eliminated, and the uterine portion is attached to the sacral portion. The weak middle third is used to strengthen the uterine portion and make its union to the sacral third more complete.

If the fundus is heavy and the round ligaments relaxed, one of the operations to shorten this ligament may be done at the same time, either the operation of Gilliam or that of Gill Wylie.

Before the development of my present technic, I had some trouble with retrodisplacement of the uterus. I have had no difficulty of that sort since I have followed my present method of shortening the ligaments. The amount of shortening must be governed by the judgment of the operator; the uterus should be suspended but not fixed to the sacrum, allowing sufficient room for the rectum, and at the same time lifting the uterus up to its normal position. As the amount of stretching varies greatly in individual cases, no fixed rule can be laid down as to the length of the fold in the ligament. There is undoubtedly, difficulty in the performance of this operation in stout people, or where there has been much mutilation due to the presence of growths or peritonitis. I do not feel that there can be any question as to the logic of this method, but I admit that it was an operation which I attempted to perform many times without ability to complete it, abandoning it for some one of the other procedures for the relief of the condition.

I have found that a No. 2 chromic acid catgut

is sufficient to hold the ligaments in place; its slow absorption rendering union very perfect. For the running stitch I have usually used plain No. 1 catgut. The needle should be round, full-curved or fish-hook. Spear-point or Hagedorn needles are to be avoided. The needle-holder that has given me the best service is an extension-point long instrument. (Fig. 7.) The advantage of this is the point grasp which enables one to grasp the needle as it is passed through the layers of the ligaments.

This operation is contraindicated in very stout people, on account of the difficulty of its performance, and where there is retroflexion of the body of the uterus with little or no prolapse. It is of particular value in retroversion with prolapse and cystocele. I shall not burden you with a repetition of cases except to briefly report the following eight:

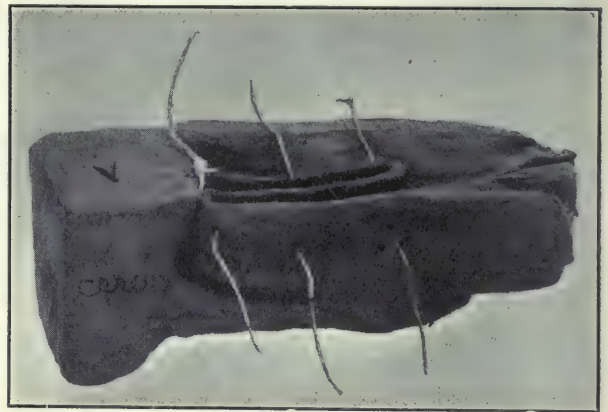


Figure 5.—Stitches in Place. Note Special Placing of the First Stitch.

E. W., single; age 20. Five years ago I operated for retroversion and myocystic ovary, and performed a ventral suspension with temporary relief. In about a year the deformity reproduced itself with return of all the symptoms. One year and a half ago I performed the sacral suspension with perfect anatomical result and relief of all symptoms. Menstruation has been regular and painless since. Relief of the neurasthenia has been very marked.

A. J., married; age 27; one child. This patient was referred to me by my friend, Dr. Douglas H. Stewart, who had performed trachelorrhaphy and posterior colporrhaphy. In this case the most marked symptom was a mechanical constipation of the most exaggerated type. At the operation, one year ago, the ligaments found were the longest I have ever seen, well marked but absolutely useless as supportive ligaments. On account of a very great laxity in the round ligaments a Gilliam operation was performed in addition to the sacral suspension. The patient has remained in perfect health since; she has normal evacuations without laxative.

E. W. N., single; age 30. The most marked symptom in this case was neurasthenia, with at-

tacks of true melancholia at the time of her menstrual periods, which had lasted for about ten years. Operation: sacral suspension one year ago. The patient has been anatomically normal, with absolute relief from neurasthenia and headache; menstruation normal.

T. K., married; age 28. Three children. Curettage, double trachelorrhaphy, perineorrhaphy, appendectomy, sacral suspension. This operation was

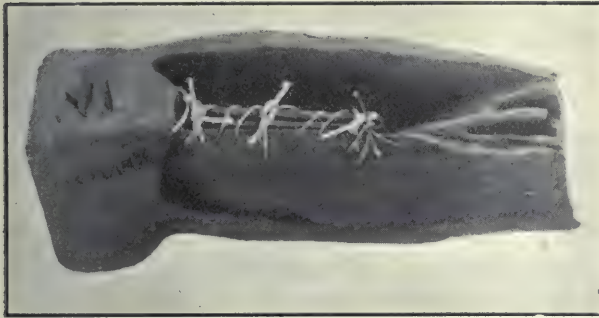


Figure 6.—Stitches Tied and Running Stitch in Place.

performed three months ago and is too recent to judge of the permanency of the cure, but it is reported simply to show that the addition of sacral suspension to the repair and other intraabdominal work is not too much for a patient even in poor general condition. The present anatomical condition is normal.

A. McC., widow; age 35; one child. The most marked symptom neurasthenia, verging on melancholia, severest about the time of her periods. Condition: retroversion with prolapse, laceration of the cervix and perineum. Operation, June, 1908: repair, with sacral suspension, together with Gill Wylie operation. The anatomical result was per-

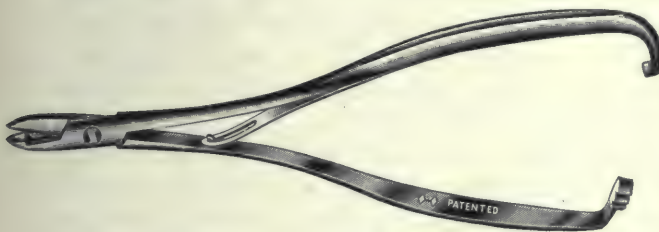


Figure 7.—The Extension-joint Needle Holder Used by the Author.

fect. The mental condition remained the same for some months after, but is at present greatly improved.

B. C., single; age 19. Most marked symptoms, dysmenorrhea, continuous backache and neurasthenia. Operation in July, 1908, curettage with sacral suspension. The result has been relief of all symptoms and examination shows normal anatomical retroversion.

A. E., single; age 27. Prolapse with retroversion. Symptoms, dysmenorrhea and backache. Operation, April, 1908; sacral suspension. The anatomical result was satisfactory and there was accompanying relief of symptoms.

A. P. A., married; age 31. One child three years ago. Operation, April 27, 1908. Uneventful

recovery and perfect result. No pain in the back, no dragging of any kind, uterus in normal position. This patient was referred to me by my friend Dr. F. O. Virgin.

I have no case of pregnancy to report after operating.

The points of advantage in the operation are as follows: The supporting of the uterus in its normal position from the bony structure above; the body and especially the fundus are freely movable for all the functions of the body; it does not distort but reproduces the curve of Carus. There are no artificial bands through which intraabdominal hernia may occur. In the event of pregnancy there is no possibility of dystocia. It relieves the patient anatomically and symptomatically.

It is particularly indicated in retroversion of the fundus with antrosession of the lower segment of the uterus, or the condition of beginning prolapse.

CANCER OF THE BREAST *

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The insidious and dangerous character of the disease under consideration and the unavoidable disfigurement following operation,—the only means that offers any chance of a cure,—justly render cancer of the breast, the dread of the female sex.

While we know that the disease may be cured, if treated early and radically, we also have learned that we cannot give a guarantee of such fortunate issue in a single instance. Since *early operation* constitutes our only weapon in dealing with this disease, the importance of such advice cannot be overrated.

Early operation, of course, depends upon an early diagnosis. Can we diagnosticate the disease at an early stage?

The diagnosis of mammary scirrhus is comparatively easy. The ease with which, ordinarily, the nipple can be pulled forward, and the hard, irregular nodule palpable, are signs plainly noticeable to a careful examiner.

It is different with adeno-carcinoma. This has no apparent effect upon the nipple; its growth is diffuse, simulating that of adeno-fibroma within which it not infrequently originates. Hence it cer-

* Being one of four papers in a symposium on this subject read before the New York Academy of Medicine, January 21, 1909.

tainly is not an easy task to diagnose adeno-carcinoma in its incipency. Before there is sufficient evidence to betray its presence, the glands and subcutaneous tissue have frequently become involved, and if operation is not done until the disease has reached this stage, it is often too late, especially in younger patients.

To confound it with the so-called diffuse interstitial fibroma (diffuse chronic mastitis), is hardly possible. The multiplicity of the tumors in the latter, the small size of the axillary glands, if present at all, the painful development, and the fact that it often occurs bilaterally, are all signs diametrically opposite to those seen in adeno-carcinoma.

The diffuse fibroma belongs to the borderland cases; a suspicious adeno-fibroma, however, needs prompt radical operation. The fact, that now and then a breast may be sacrificed in which the microscope later fails to detect carcinoma, should be no deterrent. Better far, to err in this, than the opposite direction.

One word here regarding chronic *suppurative* mastitis. I have had a number of cases under my care, showing a diffuse, hard swelling which had developed after confinement and nursing and had persisted, sometimes for three or four years afterward. Now and then there was pain, usually little tenderness. These patients were sent to me for operation with the diagnosis of carcinoma. However, the long duration of the trouble, its diffuseness, the trace of the finger tip that persisted after pressure, and the fact, that the aspirator drew pus, a fluid that carcinoma never harbors, made me hesitate to accept the diagnosis. Simple incision effected a cure in these cases.

To remove such a breast on the possibility that the long existing inflammatory focus might produce a malignant growth, would certainly be going too far in our desire to be radical. In making our diagnosis, therefore, in tumors that admit of doubt as to their malignancy, we should never forget the use of the aspirator.

Before proceeding to present my results, I should like to briefly describe the method I employ.

Every one of my cases was operated upon by the procedure which was first published by me in 1894 (*New York Medical Record*, December 15). Its principal characteristics are, that the affected breast together with the two pectoral muscles in their entirety, plus axillary as well as subclavian glands and surrounding fat, are lifted out in one mass. All incisions are made within healthy tissue, as far as this is feasible. The work is done from the axilla toward the breast. Bloodvessels, arteries, as well as

veins, are promptly divided at their exit from or entrance into the axillary vessels. The lymphatics are also first cut here, before the seat of the disease is approached. As the tendon of the pectoralis major muscle is primarily divided at the humerus, it is necessary to remove the whole muscle, *i. e.*, its clavicular portion included. The operation is typical, anatomical, simple and accomplished with a minimum loss of blood.¹ Its characteristic features have been absolutely maintained up to the present time.

In 1899 I made a slight change regarding the course of the axillary part of the skin incision. Prior to that time I had it run through the axilla. I then changed it so as to have it pass about two fingers' widths above the lower border of the great pectoralis muscle. This permits of a more effective shifting of the lower flap at the completion of the operation, making it possible to cover a greater part of the resulting defect. I have also discontinued the practice of dividing the upper flap by an incision toward the middle of the clavicle. One can well get along without it. Thereupon I form one large upper and one large lower flap, circumsise the base of the breast, without any regard to saving skin, and graft the resulting defect at the end of the operation.

The technic of the operation just described, I believe, could not be improved upon, unless the future should show that it is advisable to resect the clavicle in an osteoplastic way or permanently, in order to follow up in an unbroken course the entire chain of lymphatic glands into the supraclavicular space and extirpate the same with the surrounding fat in one mass, freely exposing the borders of the muscles, forming the landmarks.

The various operations devised by others within the last fourteen years are all based on the principles laid down in the above described operation. The only exception is the operation of Halsted, who, as every surgeon knows, saves the clavicular portion of the pectoralis major muscle and reunites the split halves of the minor. He works from the sternum toward the axilla. He published his procedure simultaneously with mine, in the fall of 1894.

The question as to whether we should remove the supraclavicular glands in every instance still remains open for discussion. Halsted has been most radical in this respect. He advises the extirpation of these glands as a routine measure.

The majority of surgeons, who have studied this deadly complication of mammary carcinoma, have found the indication for this additional operation

¹ See *Journal of the American Medical Association*, July 29, 1906.

whenever the tumor had invaded the two upper quadrants of the breast, especially if it had become adherent to the skin, and subcutaneous tissues over this region, and this on the basis of the anatomical facts so well pointed out by Poirier, Cunéo and Delamere, in their work on "The Lymphatics," showing that the lymphatics of this portion of the breast feed just these glands. Personally, I have until now acted strictly upon this indication, all the more as these glands had not been removed in thirteen of my patients that remained well from five to twelve and one-half years.

However, a recent experience has set me to thinking whether it might not be wiser, after all, to add this operation in every instance, (in weak patients perhaps in a second sitting soon after the healing of the wound of the first operation).

I will here briefly relate the case: Female, now 64 years of age. In July, 1900, I performed the radical operation for an ulcerating scirrhous in the outer layer quadrant. For eight years the patient remained in perfect condition. I considered her one of my star cases, inasmuch as she seemed to be in such perfect health the entire time and enjoyed absolutely unencumbered use of her arms. Eight years later, in May, 1908, she came to my office with a small tumor over the cartilage of the second rib. She had observed it for the last two and one-half months, but was afraid to come to me. Examination showed a local recurrence, slightly movable, as it seemed to me, at the site mentioned. When I operated a few days later, the tumor appeared to be sessile on this cartilage, involving the adjacent part of the sternum. It seemed diffusely connected with the surrounding tissues. As much of the growth as possible was lifted out with the help of a broad, grooved chisel and the wound closed without drainage. I did not do any additional operation above the clavicle, because I considered the patient absolutely doomed, expecting a prompt continuation of the disease in view of the cancerous elements that had to be left behind. The wound healed by primary union. In the absence of better means, I had her use a large, oval Bier's suction cup daily for forty-five minutes over the scar, six times, five minutes, with the usual three minutes' intermission, and, in addition, referred her for treatment to an x-ray specialist who gave her three exposures a week. To my surprise, the tumor has not recurred up to the present time, seven months since, but the supraclavicular glands were found involved three weeks ago. I did a very extensive removal, but found the entire supraclavicular space badly involved. In view of this state of affairs I could not but think that,

had the supraclavicular space been cleaned out thoroughly in 1900, this patient might perhaps have been saved. As matters stand, I consider she can live but a very short time.

I here give my observation of the result of hyperemic treatment by means of the suction cup, for what it is worth. Reliable data as to its favorable action upon inoperable sarcoma are at hand.² After my personal experience, I shall certainly use it as an adjuvant in the after-treatment of operating fields that could not be cleaned of the disease even macroscopically.

Another phase of the disease not infrequently met with, I think, deserves to be briefly mentioned in this connection. I refer to carcinoma of such accessory mammary glands as are found in the axilla or in the upper outer quadrant of the breast, either attached or unattached to the breast. One cannot be too careful with these tumors. I have had two sad experiences which have shown me beyond a doubt, that it is unwise, in these cases, to do anything short of a radical extirpation of the breast, including, of course, the removal of the accessory gland.

In the first I had removed a beginning carcinoma of a typical accessory breast in the axillary cavity in a woman of 47. The wound healed by primary union. Not quite two and a half years later the patient came to me with a distinct cancer in the breast. A radical operation was performed eighteen months later, a recurrent tumor had to be removed from the axilla, necessitating resection of the axillary artery. One year later the patient died of internal metastases.

The second case came under my care last summer. This was a young mother of 28 years, who had noticed a small tumor near the anterior aspect of the acromion, not connected with the breast. She was sent to a surgeon who removed the tumor under cocaine. One pathologist pronounced the tumor carcinoma, a diagnosis which was questioned by others. Unfortunately there was some mix-up with the specimen and the case was allowed to go on without further operation. Five months later an infiltrating tumor had invaded the upper outer quadrant. Then the breast and glands were removed. To-day the patient has an inoperable glandular infiltration in the supraclavicular region with multiple metastases.

I cannot help but think that had these cases been subjected to radical removal of the breast, including the original tumors, the outcome might have been different.

² Muenchener Med. Wochenschr. No. 43, p. 21-24, 1907.

Now, as to my statistics. They represent the end results and could be added to those reported by thirteen other surgeons before the meeting of the American Surgical Association, held at Washington, in May, 1907.* I should have been glad to trace the surviving cases up to the present, but the time within which I have had to prepare this paper was insufficient for such an undertaking.

My series, as far as traced, comprises eighty patients operated upon by means of the radical operation, described above. Sixteen of these were operated upon from ten to twelve and one-half years ago, *i. e.*, between September, 1894, and April, 1897. Of these, three, or 18.7 per cent., were alive and well from eleven to twelve and one-half years after operation. I happen to know that these three patients are enjoying perfect health to-day.

Of twenty-seven patients operated upon from five to ten years ago, *i. e.*, between April, 1897 and April, 1902, six, or 22.2 per cent., were alive and well in May, 1907, from five and three-quarters to nine and one-half years after operation.

Of the forty-three patients operated upon between September, 1894, and April, 1902, seventeen, or 39.5 per cent., remained free from recurrence from three to twelve and one-half years after operation; and thirteen, that is, 30 per cent., from five to twelve and one-half years after operation.

Twenty patients were operated upon from three to five years ago, *i. e.*, between April, 1902, and April, 1904. Of these, ten, or 50 per cent., were alive and well twenty months ago.

I will omit the end-results of the seventeen patients who were operated upon within the three years preceding April, 1907, the date of my statistic. They are of no special value, being too recent to permit of any conclusions.

Of the remaining sixty-three cases operated upon more than three years prior to May, 1907, twenty-eight, or 44.4 per cent. lived from three to twelve and one-half years after operation.

Forty of my eighty cases, or 50 per cent., died of the disease within three years after operation. Twenty-four of these within one and one-half years after operation.

I wish to add that my cases were operated upon as they came along. I have never refused the operation, nor selected my cases in order to improve my statistics.

In conclusion I should like to say a few words regarding the so-called borderland tumors, *i. e.*, fibro-adenoma, diffuse chronic mastitis, cysts, etc.,

which now and then are the precursors of carcinoma. The more I have seen of this class of cases, the more I feel convinced that the only safe plan is to operate upon every case over twenty-five to thirty years of age, and not allow them to go on until unmistakable signs of malignancy have become apparent, when it may be too late to help the patient.

I fully agree with Dr. Gibson's views as expressed in his instructive paper, read about a week ago, before the New York Surgical Society. In these cases the tumor should be removed by all means, and this is best done by lifting up the breast with the help of an incision at the junction of the breast and chest, at the base of the two lower quadrants, as originally advised by the late T. Gaillard Thomas, of New York, in 1882, on basis of twelve cases successfully operated upon in this manner (*New York Medical Journal*, 1882, p. 337) and later worked out further by F. Collins Warren, of Boston (*Journal of the American Medical Association*, 1905, July 15, p. 149). Then, if the pathologist (who should be present on these occasions) pronounces the tumor undoubtedly malignant, the necessary radical work may be at once added. In cases in which there exists doubt as to the true nature of the growth, and more time is needed for more careful examination, the wound will have to be closed and the radical work done at a second sitting, if found necessary.

It must be our aim to train physicians as well as the laity to recognize the serious character these troubles may assume, especially if occurring in the fourth and fifth decades of life. If operation be promptly done in these cases, we may hope to succeed in removing the malignant tissue—if such be present—before glandular infection has occurred, before the first metastatic deposits have been made.

By widening the indication for operation so as to include this class of cases, we may look for gradual improvement as regards the late results of the radical operation for carcinoma of the breast.

But perhaps the goal toward which so much effort has been directed within recent years, both here and abroad—the discovery of the cause of cancer—is not as far off as we think.

Let us hope that the man has been born, who—like Schaudinn did in regard to syphilis—will find the protozoon and its various species that perhaps is the cause of cancer.

Summing up, I would say, that we may hope to improve our end-results

First, by early radical operation, based on early diagnosis;

* Surgery, Gynecology and Obstetrics, Vol. V, No. 1, July, 1907.

Second, by educating the public to understand that the painlessly developing tumor is the most dangerous one;

Third, by operating also upon circumscribed apparently benign tumors, which may become transformed into malignant ones;

Fourth, by finding the cause of carcinoma.

ON THE SURGERY OF FOREIGN BODIES, WITH ESPECIAL REFERENCE TO THOSE OCCURRING IN THE SKELE- TAL TISSUES. INCLUDING THE DESCRIPTION OF A LO- CALIZING METHOD.

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In the consideration of this subject I shall not deal with the removal of foreign objects from the organs or cavities of the bodies. They constitute, for each location, a special surgery, elaborately considered in the literature. I shall discuss, rather, the surgery of those, usually small, foreign bodies which so frequently become imbedded in the muscles and fasciae, especially of the hand and foot. This subject, largely within the domain of so-called minor surgery, has been, perhaps for that reason, largely neglected by our text-books. Yet probably no single problem with which the surgeon is called upon to deal is more tantalizing, technically, than the removal of small foreign bodies lost within the muscles; and certainly this often requires, for its accomplishment, no *minor* skill. I, therefore, do not feel the need of an apology for presenting here some observations on the subject acquired in an experience of not a few years in the clinic and in the *x-ray* laboratory.

INDICATIONS FOR REMOVAL.

The immediate treatment of bullet wounds has been established by military surgeons and does not concern us here. Nor, again, do the indications for, and contraindications to, the removal of foreign bodies from special organs, *e. g.*, the brain. Speaking broadly, foreign bodies in accessible parts, and especially in the hand and foot, should be removed; foreign bodies deeply imbedded in the bulkier parts, or otherwise not readily accessible, may be left unmolested if they are producing no symptoms, and if

they threaten no trouble, either by their character or by their location. When it causes suppuration, a foreign body is usually easily found, but if there be difficulty in locating it, it is better to be content with drainage for a few days rather than expose uninfected areas by a prolonged search.

SYMPTOMS.

In many cases, even when the injury is very recent, there are no symptoms. In other cases the symptoms that may be produced by foreign bodies in the skeletal tissues are: *spontaneous pain, tenderness, inflammation, impairment of function*. In the presence of one or more of these symptoms and a suggestive history, one should not allow himself to deny the presence of a foreign body merely on the report of a hasty fluoroscopic examination. To be sure, a foreign body that has entered but has not remained in the tissues may produce these symptoms for a greater or less time and to a greater or less degree. And, of course, neurasthenics exaggerate their pains and are susceptible to suggestion; but the old observation cannot be too often repeated that the physician who is quick to attribute symptoms to "neurasthenia" is in danger of being frequently put to shame by more painstaking colleagues.

Even in the absence of a suggestive history, one should bear in mind the possibility of a foreign body as the cause of localized pain, tenderness, inflammation or impaired function, when the cause cannot otherwise be determined. Let me illustrate by two instances:

A woman was referred to me because of an area of persistent pain, tenderness and swelling in her left deltoid region which had not responded to her physician's treatment. Finding no other explanation, the location of the lesion suggested to me the possibility of a hypodermatic injection as its cause. The patient did not recall having had any injection, but her husband then told me that some weeks previously, during an illness, one had been made, in great haste, at that part. The physician then in attendance did not report, what a skiagraph now showed, that his needle had broken off in the tissues.

A man came to the dispensary complaining of pain in the sole of one foot, and swelling in the metatarsal region. There was a linear scar along the dorsum, and the patient stated that he had recently been operated upon in one of the hospitals of this city for some disease of the bone, he thought. Believing that a continuation of the osteal disease was probably causing the pain and swelling, I had a skiagraph made. The picture showed normal metatarsal shadows and between two of them the shadow of a slender metallic ob-

ject about four inches long. It looked very much like the skiagraph of a surgeon's probe—whether there by accident or design, I do not know. The patient did not return for treatment.

Needle thrusts are often only slightly painful, and thus it occasionally happens that there is buried in the tissues a fragment of needle, the entrance of which the patient did not appreciate or has quite forgotten.

Creeping infants may gather wood splinters or needles in their hands or knees, and abscesses in those localities should suggest such an etiology.

LOCALIZATION.

While all four of the symptoms mentioned above are suggestive of the presence of a foreign body, two of them—*inflammation* and *tenderness*—may be actually diagnostic of its location. Thus, at the bottom of a suppurating tract resulting from the lodgment of a foreign body, lies the body itself. Circumscribed tenderness is especially significant of the location of the object. One must, of course, make allowance for the tenderness due to infection, when this is present. Properly elicited, however, a point of persistent maximum tenderness is fairly diagnostic of the location of the body beneath that point. By pressure, with the finger tip or a slender instrument, on one spot after another in the suspected region, one may elicit only a single point of tenderness, or a point of maximal, and several adjacent points of lesser tenderness. The single or maximal point indicates usually the location of the most superficial part of the foreign body, especially if it be a needle or sharp splinter of glass, wood, etc.; the points of lesser tenderness map out, in a rough way, the general direction of the body. It has repeatedly happened, in the out-patient department, that assistants have localized a foreign body with the fluoroscope at an area more or less remote from that which the point of entry, the pain and the tenderness have made me believe that it occupied; and each time they have been convinced, by their efforts to remove the object, that the clinical signs were more accurate than their interpretation of the fluoroscopic picture.

The character of the injury, the nature of the entering body and its point of entry, the duration of time that it has been in the tissues, are all factors more or less helpful in estimating the location of the object. Unquestionably needles, and perhaps other very slender metallic bodies, that have been long in the tissues, sometimes migrate great distances. But when the injury is recent foreign bodies, including needles but, of course, excluding bul-

lets and other objects traveling with great force and speed, will be found to lie not far from the point of entry. Indeed, if one had no means of localization, and made his incision through, and a patient dissection beneath, this point, he could remove a large percentage of foreign bodies. Needle fragments will travel further from their entry than bulky or irregular objects, such as glass and wood splinters are apt to be. The more violent the impact the more deeply will the object be thrust, as a rule; and the patient's account of the injury is therefore valuable. Sewing machine needles are often driven through the terminal phalanx, an accident that does not happen in hand sewing. A needle entering the palm while wiping a table will usually not penetrate as deeply as one encountered during vigorous polishing. Needles are more often thrust into the fleshy part of the palm (the thenar and hypothenar eminences, and the area joining them near the wrist) than in other portions; and more often into the ball and heel of the foot than into the midsole. A needle fragment in the fleshy palm, where the muscles are compact and in more or less constant activity, will, I think, be displaced more in a few hours than one in the sole of the foot, where the intrinsic muscles are deeper, less compactly disposed and less active, and where, also, the dense plantar fascia sometimes holds the needle. In the palm foreign bodies, by reason of the direction of the thrust, often point towards the dorsum and, in a general way, towards the center of the wrist, and such movements as they undergo by muscular contractions carry them further in those directions. Slender objects entering the sole are usually driven upwards and backwards. In the heel there are no muscle bellies to move them and I doubt that the impact of walking much disturbs the primary locus.

When an open wound accompanies the injury the foreign body (glass, bullet, etc.), may often be located by means of *probing*—a procedure not to be recommended for deep bullet wounds, however.

Finally, of course, foreign bodies occasionally lie, wholly or in part, palpably in or beneath the skin.

But in spite of all these considerations it must be confessed that in most instances we would be wholly at a loss for accurate localization, without the x-rays.

In civil practice, in my experience, at least, foreign bodies are lost in the skeletal tissues in about the following order of frequency: 1. Sewing needles. 2. Glass fragments. 3. Wood splinters. 4. Fragments of steel, brass, etc. 5. Blank cartridge wads (most often on July 4th). 6. Powder grains. 7. Bullets and shot. 8. Miscellaneous

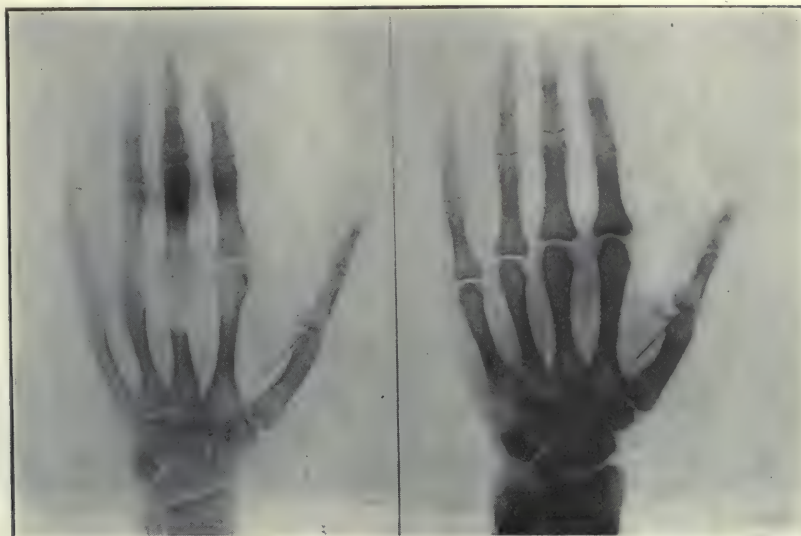


Figure A.—Stereoscopic radiographs of a needle in the hand. Reduced for the hand stereoscope.

bodies, *e. g.*, broken hypodermatic needles, pieces of bone, shell, etc., pen nibs, pencils, and large portions of metal and wood from impaling accidents. All the objects on this list are demonstrable by the *x*-ray except cartridge wads and powder grains,—which require no localization, and wood fragments,—which are usually deposited not far from their site of entry.

When a patient presents himself with a foreign body in his skeletal tissues, it too often happens that a cursory fluoroscopic examination or a single skiagraph is made, and on the basis of this slender localizing evidence, the extraction of the object is undertaken. In such cases the surgeon is doomed to disappointment or his patient, at any rate, is subjected to an unnecessarily extensive operation.

Concerning fluoroscopic localization two sets of facts must be emphasized. First, repeated examinations are disastrous to the surgeon (unless, as is rarely the case, he has elaborate protective apparatus); and a prolonged examination is often disastrous to the patient. Second, fluoroscopy does not lie, but it does deceive the inexpert.

Fluoroscopic localization must be undertaken systematically deliberately, but expeditiously. The shadow of the body having been seen, the part should be moved before the tube until it reaches a point where slight movements produce minimal excursion of the shadow and minimal changes in its shape. At that time the body is on a line with the

tions of the shadow to the bone and skin outlines should now be carefully noted. Keeping the shadow on the line between the eyes and target, if the part be now rotated through a right angle, the shadow then seen will afford an *approximate* expression of the depth of the body. A combination of the images thus seen (or similarly preserved on *x*-ray plates) will *approximately* determine the level, depth, direction and length of the object—but *only approximately*.

When the fluorescent screen is held at right angles to the beam of *x*-light the shadow is foreshortened (unless the object is parallel to the screen, in which case its shadow is slightly larger than itself), and so the part must be rotated to various angles in order to estimate the length of the object. Next rotating the part in the plane of the fluoroscope, *i. e.*, around an axis represented by the beam of light, one notes that one end of the shadow of the foreign body has a wider excursion than the other. The end moving most is deepest. If one end, or all of the shadow, moves but little, it is lying superficially (*i. e.*, near the skin facing the examiner), and if, on changing the angle of the parts to the *x*-rays, one end moves scarcely at all, it must lie just beneath the skin. If the shadow of the bone excurses more, on moving the part, than the shadow of the object, the bone lies deeper than the object, and vice-versa. The relative excursions of the two shadows will afford an estimate of the depth relations of the bone and the object. When part of the shadow of the object is inseparable, on free rotation, from the bone shadow, that part of the object, lies in, or in contact with the bone. When

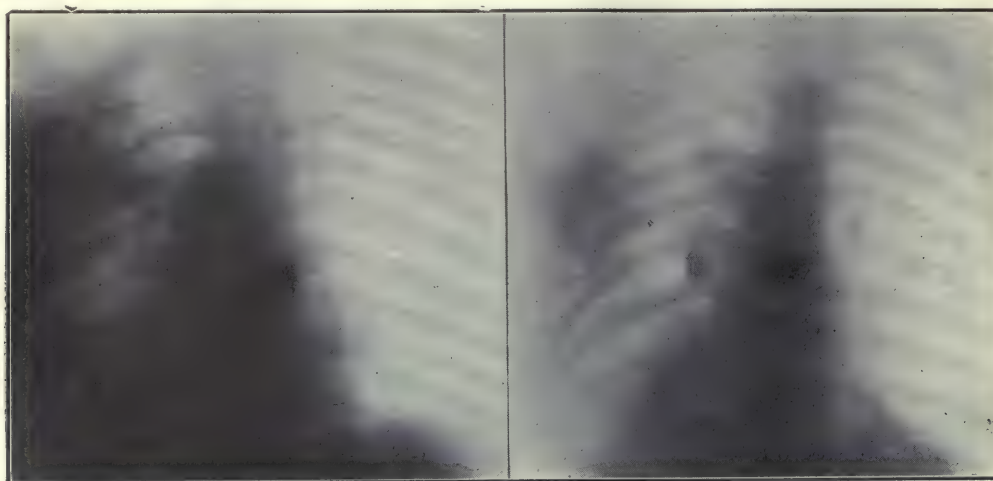


Figure B.—Stereoscopic radiographs of a bullet in the lung. Note the relations of the shadows of the bullet, and of the metallic "markers" placed, respectively, on the sternum and on the spine.
(This is an unsatisfactory reproduction of two 11 x 14 negatives which, in the large instrument, produced an excellent stereoscopic effect.)

the relations of the target and the plane of the screen are gauged, it is helpful, especially in fluoroscopy of bulky parts, to note the relations of the shadows of the foreign body and of probes placed at various levels on the skin, and with the part placed at different angles. There are other devices for more exact fluoroscopic localization, and, indeed, some elaborate methods for securing accurate data.* Into these I shall not enter. The localizing methods described below are not only more satisfactory but also less hazardous to the patient and the examiner. If the mistake were not often made, it would be scarcely necessary to remind the reader that the shadow of a foreign body may be simulated by a defect in the fluorescent screen.

Stereoscopic radiography† affords the most vivid localization (and permanent representation) of foreign bodies, since it reconstructs before the eye, the object, the bones, and some of the soft parts, in all the dimensions of space. For foreign bodies in the extremities, and especially in the joints, it affords, in my experience, the most satisfactory localization for the surgeon. (See Figure A,—stereoscopic radiographs of a needle in the hand, reduced for the hand stereoscope.) And, indeed, its value for all parts of the body is very great.

In addition to the stereoscope itself, two details of equipment are essential to stereo-radiography: (1) A device for moving the vacuum tube, between the two exposures, an exact distance in a horizontal line, usually transverse to the part examined. (The distance between the visual axes, about two and a

half inches, is the distance through which the tube is displaced.) (2) A means of placing two plates, successively, identically under the part examined, without in the least disturbing the position of that part.

The writer has described* a wooden *x*-ray tube-stand (Fig. 1), of which the tube arm, bearing an inch scale can be moved by hand wheels, vertically on the graduated upright, and horizontally behind an indicator; and an *x*-ray table (Fig. 2) on one side of which slides this tube-stand, modified. The top of the table is divided into a fixed and an adjustable portion, each of fiber, marked off in small squares; and beneath each of these is a wooden plate-holding shelf, correspondingly marked, and so adjusted that the *x*-ray plate can be brought to lie immediately beneath the fiber top, at the proper place. Lacking these, or other apparatus designed for stereo-radiography one can, no doubt, extemporize some means for properly displacing the tube; and for the plates one may use a wooden slide, or box, open at one end, as shown in Figure 3. The box may be made to accurately accommodate plates of various sizes by inserting appropriate wooden obturators.

Stereo-radiography, valuable as it is, has certain limitations: An apparatus for examining the negatives is not always available; and to reduce these for the hand stereoscope is expensive, time-consuming and not always satisfactory. (The stereoscopic radiographs of a bullet in the chest in Figure B, are quite disappointing, although they were re-

* See Bouchard: *Traité de Radiologie Médicale*.

† Mackenzie Davidson devised, and Caldwell has modified, an apparatus for stereo-fluoroscopy. It is not generally employed.

* "A New X-Ray Tube-Stand; A New X-Ray Table," AMERICAN JOURNAL OF SURGERY, April, 1906; *Archives of the Roentgen Ray*, February, 1906.

duced from negatives which afforded an excellent demonstration in a large stereoscope.) The stereoscopic effect is not always satisfactory even in the negatives; this is true most often of the larger parts of the body, since the contrasts are less marked, and the tube must be a considerable distance from the plate. Stereoscopic pictures often exaggerate depth relations. Finally, these relations must be judged by the eye, actual distances are wanting, and they are sometimes very important, as, for example, for the removal of a foreign body in the brain.

In addition to the methods of localization above discussed, we sometimes need, therefore, a system of *mathematical localization*. Some years ago, when

The patient's body having been carefully disposed on the table the fixed point on the skin is selected. This should preferably be some bony landmark near the general location of the foreign body. If the chest is exposed one selects some point on the mid-sternum or the spine; if the thigh, an arbitrary point; if the head, the most prominent portion of the exposed malar bone; if the foreign body is in the brain one may measure out on the scalp one of the landmarks known to cerebral topography. Whatever spot is selected is painted with a drop of some dye or, more durably, of silver nitrate solution. Over this spot is laid, or fastened with isinglass plaster, some small metallic object of distinctive shape, to serve as a "marker."

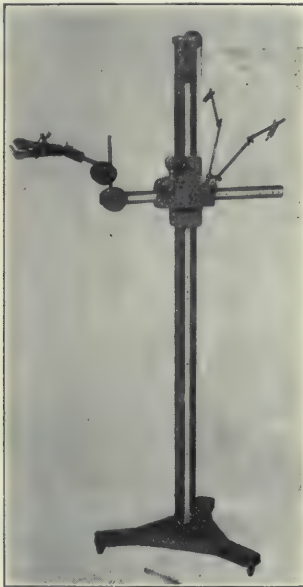


Figure 1.—Author's X-Ray Tube Stand.

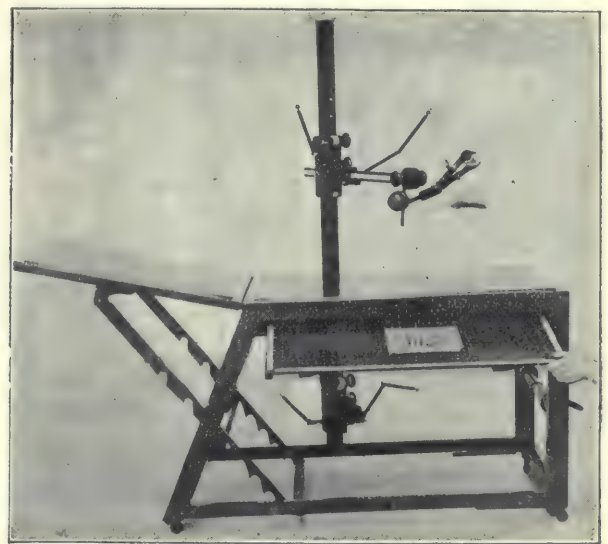


Figure 2.—Author's X-Ray Table (Opened), showing one of the two plate shelves.

in charge of the *x*-ray department of Mount Sinai Hospital, I devised a method of localization which I have hitherto hesitated to describe because its very simplicity has made me believe it not unlikely that it has also occurred to others. Like all other localizing methods it depends upon the principle of shadow projection or triangulation. But, unlike the methods of Mackenzie Davidson and others, it needs neither a special apparatus nor elaborate calculations.

The armamentarium for the exposures is the same as for stereo-radiographic exposures; and for the calculations one needs only the negatives, a large sheet of paper, a long ruler and a pencil, to which may be added a pair of calipers. The other essentials are a plumb line, a memorandum of certain distances used in the exposures, a fixed point marked on the skin, and a metallic "marker" placed over that point.

At a convenient height the *x*-ray tube is now adjusted so that the target is directly over the marker. This is determined by means of a plumb line. The plumb line illustrated in Figure 4, was made for me by the Wappler Electric Controller Co. (who also manufactured the tube-stand and the table). On this instrument we read off, and note on a piece of paper, the exact distance between the marker* and the glass tube just below the target. (BC in Figure 5.) A plate is now placed in position (a metallic object fastened over one corner of the en-

* The marker, or an additional marker, may be placed on the skin next to the plate. But on the under part of the body, it is less accurately brought in a vertical line with the target, and, its shadow undergoing little displacement, the projection lines in the diagram may fall too close for accurate determination.

In this connection, however, may be mentioned a device for determining the levels of the vertebrae in a stout subject. An arbitrary spot on the spine is covered with a marker and, with the patient supine, a skiagraph is made on a plate large enough to include the first or the last rib. The vertebrae are counted on the plate and a note is made of that one nearest to the shadow of the marker, the skin beneath which had previously been painted with silver solution. This was done in the case of which the skiagraphs are shown in Figure B.

velope will serve, by its shadow, to distinguish it afterwards as plate No. I). The tube is displaced a measured distance to the left (Figure 5, AA') and the first exposure is made. The first plate is replaced by a second one,* the tube is moved a measured distance to the right (AA''), and a second exposure is made.

The displacements of the tube may be quite arbitrary, but if they are made each one and one-quarter inches from the median position, the plates will also afford a stereoscopic view, and the two methods may be thus combined. After (or before) the exposures are made there is measured with the plumb line the distance from the tube to the table or plate box. (B D). Also with calipers, measurement is made of the vertical line (A B) between the target

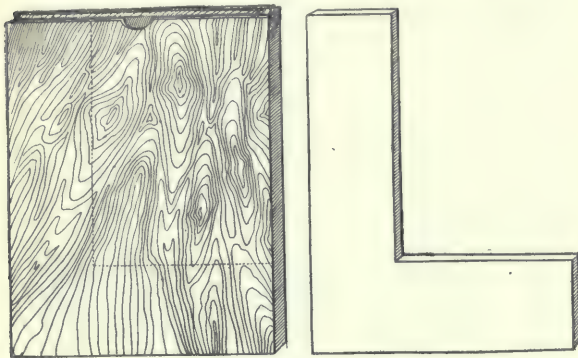


Figure 3.—Plate Box and Wooden Obturator, for stereoscopic or localizing radiography.

and the glass tube. (This measurement is only approximate.†)

On a large piece of paper now reproduce the conditions of the exposures, as in figure 5. Draw the horizontal line xx to represent the top of the table or plate holder, and below it, at a distance equal to the thickness of the table top or holder, draw the line yy to represent the plate. Measure off the vertical line AD equal to the sum of the measurements BD and AB . Mark off on it the distance BC . C now represents the marker. Measure off the horizontal tube displacements AA' and AA'' . A' is the target in the first exposure, and A'' the target in the second exposure. Draw through the marker C a line from A' to the plate line yy . The point of intersection E' represents the projection or shadow of the marker on the first plate, and similarly E'' is marked to represent the shadow of the marker on the second plate.

* Both exposures may be made on one plate, but this invites confusion, and does not allow the use of the negatives for stereoscopy.

† Caldwell has described (Pusey & Coldwell: *The Roentgen Ray in Therapeutics and Diagnosis*) a method of accurately measuring the distance between the target and the plate. It involves an additional, though not complicated, apparatus, and an extra set of skiagraph measurements and triangulations. This refinement, it seems to the writer, is rarely necessary.

Now on the first skiagraph measure off (preferably with calipers) the distance that a vertical line through the shadow of the foreign body lies to the left or the right of a vertical through the shadow of the marker. Lay off this distance ($E'I$) on the line yy to the left or right, respectively, from E' . I represents the shadow of the foreign body on the first negative. Draw the line $A'I$, the path of the light through the foreign body in the first exposure. On the second skiagraph measure similarly the horizontal distance between the shadows of foreign body and marker and lay this off $E''J$ in the proper direction from E'' on the plate line. Draw the line

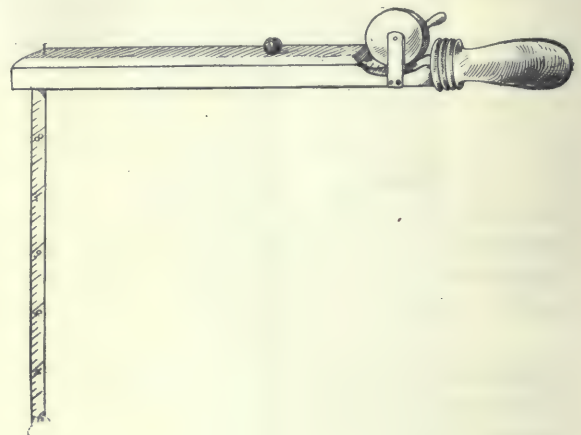


Figure 4.—Plumb-line. The distance from the tip of the weight to the tip of the nail is read on the tape where it emerges from the staff.

$A''J$, the path of light through the foreign body in the second exposure. The intersection of $A'I$ and $A''J$ at O' represents the foreign body itself. The length of its coordinates $O'O$ and OD , as measured on the paper, are the distances that the foreign body lies from the planes AD and xx respectively, i. e., in the case of a chest, from the midsagittal line of the body and from the skin over the spine, in the horizontal plane.

To determine the level of the foreign body in the vertical plane we may use the same or another diagram (figure 6). Draw the lines xx and yy , and the line AE (the perpendicular distance of the target from the plate in both exposures). E represents now the shadow of the marker. On either plate (the measurement is the same on both) determine the vertical distance that the shadow of the foreign body lies above, or below, that of the marker, and lay off this distance EQ above or below, respectively, the point E on the plate line yy . Draw AQ , the path of light through the foreign

body. Measure off DO , the horizontal depth of the foreign body as previously determined, and draw at right angles to it the line OM . The length of this line is the actual distance of the foreign body above, or below, the horizontal plane through the marker.

In the above description, and in the diagrams, the foreign body has been considered for simplicity, as a single point. In practice, however, one may plot out in the same way the extremities of the shadows

and the bony landmarks numerous. In the chest one may easily translate the measured relations of the foreign body with the painted spot on the skin, to relations with vertebrae and ribs.

In the case of which stereo-radiographs are reproduced in Figure B, a bullet had entered at the left shoulder. A single skiagraph showed its shadow between those of the 6th and 7th ribs to the left of the spine. A search through the muscles at that area failed to reveal it. Two plates were then exposed by this localizing method, the tube being displaced $2\frac{1}{2}$ inches in order to allow stereoscopic examination also. The stereoscope showed the

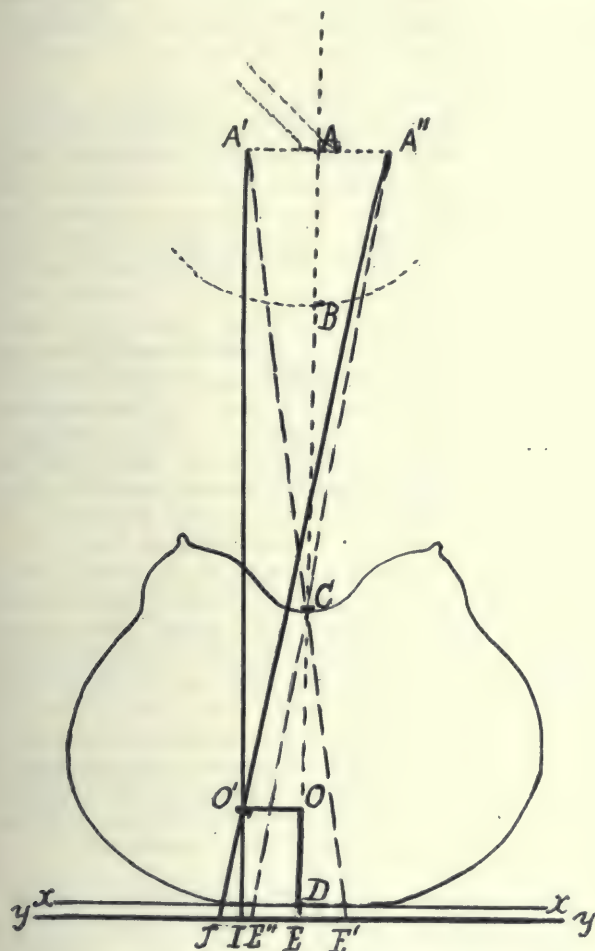


Figure 5.—Author's Localizing Method. Representing the localization of a foreign body in a horizontal plane of the chest.

xx , the top of the table; yy , the position of the plates; C , a spot over the sternum marked by nitrate of silver and covered by a metallic "marker"; A , target of tube when centered vertically over C ; AB , distance between target and wall of tube; BD , distance between tube and table; AA'' , horizontal displacement of tube for first exposure; AA'' , horizontal displacement of tube for second exposure; E' , shadow of marker in first exposure; $E'I$, horizontal distance (to the left) of shadow of foreign body from shadow of marker on first plate; I , shadow of foreign body on first plate; E'' , $E''J$, J , points and measurement, on second plate, corresponding, respectively, to E' , $E'I$, I ; $A'I$, projection of foreign body in first exposure; $A''J$, projection of foreign body in second exposure; O' , the foreign body; OO' , its distance from (to the left of) median sagittal line; OD , its depth from the back.

of the object, and thus determine its shape, dimensions and direction.

This method is most exact for the chest and the head, the outlines of which are practically fixed,

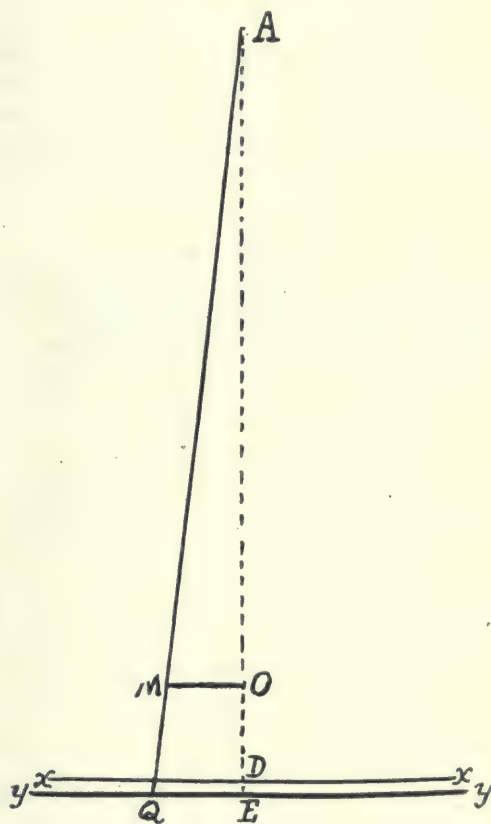


Figure 6.—Localizing Method. Representing the determination on a vertical plane of a foreign body in the chest.

A , represents horizontal line occupied by target in both exposures; xx , yy , AE , DO , as in figure 5; E , shadow of marker; EQ , vertical distance of shadow of foreign body from (above or below) shadow of marker on plates; AQ , projection of foreign body in both exposures; OM , actual distance of foreign body (above or below) horizontal plane through marked spot on skin.

bullet apparently deeply imbedded in the lower lobe of the left lung. The localization placed it more precisely on a level with the 7th intercostal space, $1\frac{5}{8}$ inches to the left of the midline of the spine and at a depth of $2\frac{3}{4}$ inches from the skin of the back. A fracture of the second rib on the left side, posteriorly, was also noted. The next day there were signs of pneumonia at the left base. From this complication the patient died.

In the head the measurements from the spot over the malar bone or other landmark may be so inter-

puted, by a study of the skiagraphs and of an average skull or brain, that one may determine, with fair accuracy, in what recess of the head the foreign body lies or, again, by its depth and distance from a marked spot over the Rolandic or Sylvian fissure, in what area of the brain it is lodged.

For the soft parts of the body, e. g., the abdomen or thigh, the method, like other localizing methods, is less exact—both because the outlines are not permanent, and also because, during the search, landmarks are absent and distances are of comparatively little service. For the slender parts of the body (hand, foot) I have not tried the method, both because stereoscopy is very satisfactory and because the estimated distances of the plate from the skin, and of the target from the circumference of the tube, might here introduce too large a margin of error. For foreign bodies in the eye the method is, of course, not at all suitable.

REMOVAL.

Occasionally, to be sure, no special technic is needed. Objects just beneath the skin may be removed through a simple incision under analgesia by freezing or infiltration. If one end of a needle projects superficially, by squeezing the muscles in the proper direction, from beneath its deeper end, it can often be driven through the skin and extracted without incision. Again, a wood or metallic splinter under the nail rarely needs a local anesthetic for its removal. It may sometimes be removed by simple extraction with a strong forceps. It is usually better, however, both because the object is apt to be broken off short, and also to provide drainage, to remove a narrow V-shaped section of the nail over the object. A small *wet* dressing should then be applied.

When a foreign body can be seen or felt in an open wound, it may be extracted through the wound, enlarging it, if necessary, by retraction or incision. If the injury has been by glass or china, or if the wound contains metal filings, it should be thoroughly irrigated, and then submitted to the *x*-rays to determine whether or not all fragments have been removed.

These are the exceptional cases. The removal of foreign bodies from the skeletal tissues is usually a much more difficult matter, and its nice surgery involves certain essentials of technic. *Accurate localization* is the first of these, and it has, therefore been considered at some length. The other essentials are: *ischemia* (for the extremities); *anesthesia* of the parts; *good light*; *intelligent assistance*; *precise anatomical dissection* (which in-

cludes familiarity with the location and direction of the structures in the field of operation); *exploration with the ungloved finger tip*; and *patience*.

The patient should be fully recumbent. If the sole of the foot is to be operated upon, it is brought to the end of the table and raised to a convenient level; if the hand or arm, this is laid on a side extension or small table.

If the skin is grimy it should be freely washed with turpentine, benzine or ether. Thorough cleansing is important, but too vigorous scrubbing may displace a needle from the position in which it was located.

A child was admitted to Dr. Lilienthal's service at Mount Sinai Hospital for the removal of a needle that entered at the *right* border of the sternum opposite the fifth intercostal space. On the day of her admission a single skiagraph showed the shadow of the needle lying *vertically* on the *left* side, about two inches from the median line, its upper end touching the lower border of the shadow of the seventh costal cartilage. Two days later Dr. Jaches, the hospital radiographist, submitted the patient to stereo-radiography combined with the localizing method described above. Both indicated that the needle lay *vertically* in the abdominal parietes on the same side and at the same level as shown in the first negative. About two hours after the localization, during which time the child remained on a stretcher, I operated upon her.

A thorough search through all the tissues in a wide area about the region indicated, failed to reveal the needle. It was finally located lying *transversely* and quite *loosely*, in the peritoneum and preperitoneal tissue on the *right* side, its outer end touching the liver.

That a needle which had remained stationary for two days should have undergone such a wide excursion just before the operation must be attributed, it seems to me, to struggling in primary narcosis and (or) to too vigorous cleansing of the skin.

In such cases as the above, especially, it is advisable to administer morphine before the narcosis, to wash the skin gently, and, when it is convenient, to secure a final *x*-ray determination, just before the last cleansing.

In the extremities the field should be rendered bloodless by the employment of a constrictor, according to familiar rules. The preliminary application of a rubber bandage to drive all blood from the limb should be omitted in cases of marked infection and of injuries by cartridge wads or other likely tetanus carriers.

Ordinarily, local anesthesia is quite satisfactory for the hand and foot, and also, usually, for the removal of foreign bodies elsewhere in the muscles not deeply situated. Indeed, under local anes-

sia the patient is sometimes able to report to the operator when his dissection reaches the object sought. Surgeons vary in their preferences for the various anesthetic agents. There are several quite suitable, when properly employed. Cocaine, if used at all, should be in very dilute solution, since considerable infiltration may be necessary. Injections are made along the proposed line of incision, endermatically, and into the tissues beneath. For each extension of the operation beyond the anesthetized field, more of the solution is to be used.

There is a rule to make the incision at an angle to the long axis of the foreign body, and when the latter is quite superficial this hoary advice is good. When the object is buried more deeply, however, the incision should be made parallel to the underlying muscle fibers. (This plan should be modified

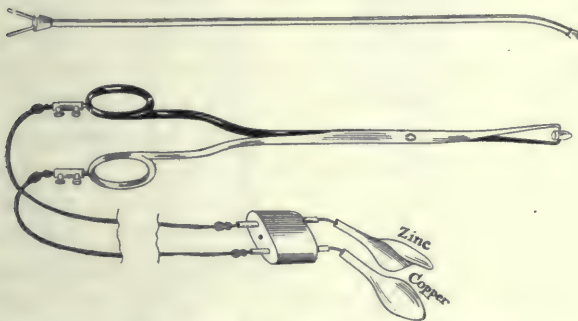


Figure 7.—Lilienthal's Electric Probe and Bullet Forceps.

only to secure the best drainage in the presence of suppuration). Unless the object has been definitely localized at some distance from the point of entry, this, when known, should be included in the incision, marking this spot for further reference by a little nick in the skin.

In the digits the dissection should be confined, if possible, to a quadrant bounded by the tendons in the median line and the nerve and bloodvessels laterally. While they cannot escape a careful search, small foreign bodies are sometimes surprisingly elusive even in these confined areas.

Sharp bodies entering the palm may penetrate between the metacarpal bones, but it is rarely preferable to attack them by a dorsal incision.

The skin wound retracted, the fascia is inspected. If the object lies wholly beneath, it is wise to at once split and widely retract it, for impact of the palpating finger with strands, especially of the tough plantar fascia, is very apt to deceive one. If the underlying muscle reveals nothing on palpation it is split, bluntly, along one of its gross divisions overlying the determined locus of the body.

Exploration in this cleft is conducted by palpation with the tip of the index or little finger, and then under the eye with the muscle retracted. A closer search through the substance of the muscle is similarly executed by separating its fibers, *not by cutting them across*. Deeper muscles are to be explored (either because of the original localization or because the object is displaced by the palpation) in the same manner. Small vessels are tied before cutting them and large ones usually do not need to be cut. In the hand the field of search is very often just between the two palmar arches, and with care most foreign bodies can be extracted without injuring either of these structures. The assistant should use his retractors strictly under the operator's directions. An unsolicited movement with these or with a sponge may drive the foreign body from the field just as the surgeon has encountered it. At all stages the dissection should be thus precise and deliberate.

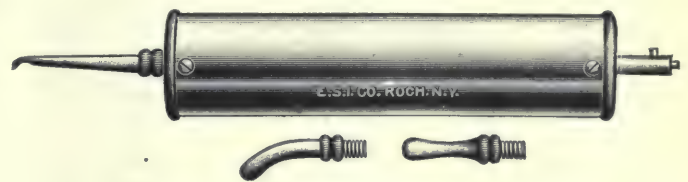


Figure 8.—Electric Magnet.

The eye and the finger tip are the best guides. The probe is here a deceptive instrument. Tense strands of tissue (vessels, nerves, fascia) feel, and small blood-filled veins look, like needle fragments. Picking and stabbing at these, and cutting into the muscles in the pursuit of each false clue, will effect a veritable hash of the tissues—which spells hemorrhage, suppuration, sensory paralysis and disturbed motility, and adds to the difficulties of a second search, since the first one, conducted in such a fashion, is often fruitless. If the operator loses his bearings, or fails to find the object within the field determined for it, far better than to continue an aimless search is it to submit the patient to a further x-ray examination, with one or more probes or needles inserted in the wound for orientation. This will redirect the surgeon in the proper path and the operation can thus be brought to a speedy termination.

When an extremity of the object is plainly felt, still no attempt should be made to extract it until it is bared of tissue. Splinters of hard wood, like pieces of glass, may become encysted in the tissues, and can often be drawn out whole by one end. But soft wood, and especially old wood, breaks on traction, and unless the wound is made large enough

to expose it all, even very large fragments may be left, unrecognized, in the tissues.

Toothed instruments are not suitable for the extraction of metal or glass. Anatomical- or dressing- forceps are more satisfactory. The "bullet forceps," still used as a volsellum, especially in gynecological work, has come down to us from the days of the lead missile and the blind search. The curette is occasionally needed when numerous glass fragments or metal filings are to be removed. A needle driven through the phalanx requires heavy forceps for its extraction, and sometimes the bone itself must be chiseled to free it.

For metal objects, especially if they be deeply buried in large muscle masses where landmarks are soon lost, certain instruments accessory to localization and extraction are occasionally helpful. One of these is the *telephone probe*. A telephone receiver is detached with its two cords. To the end of one of these a probe or exploring needle is fastened; to the other a sponge electrode, to be placed conveniently on the patient's skin. When the probe touches the metal object a distinct click or grating sound is heard in the receiver, held to the surgeon's or assistant's ear.

Lilienthal's electric probe (figure 7) consists of two segments, insulated from each other, each attached to a conducting cord. The tips of the segments are about one-sixteenth of an inch apart. The cords terminate in metal plates, one of zinc and the other of copper, which are held in the mouth, one on each side of the tongue. When the tip of the probe touches the metal a mild galvanic current is distinctly felt in the tongue. In Lilienthal's bullet forceps the two segments of the probe are replaced by the two blades of the forceps, one of them insulated except at its tip.

The telephone probe and the electric probe are alike in principle. In the first the battery is the patient's body, in the second, the surgeon's; in both the metallic object completes the circuit. In both, also, actual contact is required, and in both the probe is thrust about in the wound more or less blindly. These devices are, therefore, of limited service. If the object is not revealed by careful visual and manual search, it is usually more satisfactory to secure another *x-ray* exposure, with metallic objects placed in the wound for orientation.

One might expect, theoretically, at least, that a *magnet* would be useful in dealing with steel or iron bodies in the skeletal tissues. Actually, however, this, too, is of but little help. A magnet will not draw a needle, for example, through any tissue, at an angle to the long axis of the needle; nor will it withdraw a needle along its axis unless the instru-

ment be powerful or the contact actual. A slender magnet will, to be sure, transmit to the operator's hand the message of contact with a needle—so will his finger; a magnet will extract a needle, not too firmly imbedded, if brought against an end of it—so will forceps.

In order to determine the usefulness of an electro-magnet in removing steel and iron bodies from the skeletal tissues, I have very recently had the Electro-Surgical Instrument Company make for me an electro-magnet about twice the size and four times the strength of the eye magnet this company manufactures (figure 8). It is used with a controller and a 32-candle power light, in connection with the street current. The tips, of various size and shape, are sterilized by boiling, and the handle is wrapped in sterile gauze. In using the instrument one must so manipulate the tip that its point is not caught under a bit of fascia or muscle, for this imparts a sensation deceptively like that of contact with the needle; and, of course, retractors and other steel instruments must be kept a little distance away.

Thus far, my experiences with this electro-magnet sum up its possibilities as follows: Occasionally it may indicate or extract a needle in a recess not convenient to the finger or forceps; if a doubtful structure be seen or felt in a wound, the magnet will determine whether it is a vein, for example, or a needle fragment; it will be of assistance in removing steel or iron filings from an open wound. Perhaps further experimentation with the instrument may somewhat enlarge its sphere of usefulness.

The Dressing. If the foreign body had been long enough imbedded to insure its sterility, if the operation is brief, and the manipulation of the tissues slight, and if there has been no break in the technic of asepsis, no drain is needed. Since these conditions seldom all obtain, drainage is usually desirable, if only by a strip of rubber tissue or split rubber tubing. The muscle rarely, but the fascia sometimes, requires a few absorbent sutures. Silk sutures, sometimes adhesive strips, are used for the skin. Before removing the tourniquet, if an extremity has been operated upon, the parts are snugly enwrapped in rolls of gauze (over a flat piece covering the wound), and a bandage is firmly applied. If the tissues are infected, the gauze may be covered with gutta-percha, and a wet dressing applied after twenty-four hours.

For the fingers I have long since abandoned the classic bandage that covers all of the finger and extends back to the wrist. Instead I apply only sufficient bandage to hold the required dressing. The last turn of the roller is made at the proximal

end of the dressing; and here it is tapered by turning in the corners. A strip of adhesive plaster not over one-fourth of an inch wide, and about twice the circumference of the finger, is applied, not constrictingly, once around, to hold the end of the bandage. Another narrow strip of plaster is passed up one side of the dressing, over the tip and down the other side, and its ends are held down by a second turn of the first strip (see figure 9). Such a bandage is less unsightly, less uncomfortable, less wasteful than that usually applied; it covers only as much of the finger as is necessary, and the exposed joints are unimpeded (the last a matter of no small importance). In private practice I use black bandages for the fingers, since they do not "soil,"

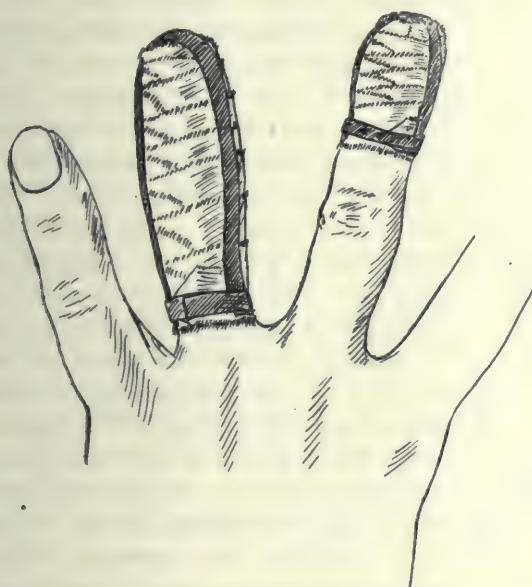


Figure 9.—Dressing of Fingers (or Toes), showing the arrangement of the adhesive plaster strips.

and fasten them with strips of black adhesive plaster.

The same bandage is applied to a toe, all of which, however, has to be included in order to secure the dressing. Although I have used this form of dressing a great many times, not once has it fallen off.

In the surgery of foreign bodies in the skeletal tissues thus far outlined, modifications are needed in certain conditions, to be briefly referred to.

Large bodies modify the treatment according to the damage they inflict. An entire skewer, or similar object, may be imbedded in the muscle without causing much injury. Large pieces of wagon shaft or fence rail, and large metal bodies escaping from a fly-wheel, do more or less violence to the tissues,

and the treatment of the wound after their removal must be guided by the surgery of those injuries.

In removing a foreign body from a joint none but an uncontaminated gloved finger should be permitted in the wound, and that no more than is necessary. If the joint is infected it is irrigated with saline solution and drained. If the foreign body is aseptic (as the modern rifle projectile is apt to be) no irrigation is employed; the opening in the joint is sutured, and a drain is placed in the outer structures. An immobilizing dressing is applied.

When dealing with blank cartridge injuries, no consideration for the integrity of the muscles should limit the thorough exposure of every part of the wound; but the larger vessels should be, and the nerves must be, spared. Every particle of wad is to be removed—by forceps, curette and free irrigation. The wound is then swabbed with tincture of iodine, or with phenol followed by alcohol. Every cranny is drained with gauze; and an abundant wet dressing is applied. An injection of a prophylactic dose of antitetanic serum is a wise precaution here—as in any case where the possibility of this infection is feared.

In attempting to formulate the surgery of foreign bodies in the skeletal tissues, the writer has not been unmindful that correct technics can greatly simplify, but not altogether remove the difficulties inherent. He appreciates that a needle buried in the muscles often seems to the operator, for a time, as elusive as though it were in the proverbial haystack. But he is convinced that, if combined with a little patience, careful localization and a nice operation will lead to success; and that, unless combined with a great deal of luck, haphazard localization and a haphazard operation will lead to disappointment and disfigurement.

30 WEST 92D STREET.

PAPILLARY SYNOVITIS.

The fundamental cause of this condition is still extremely obscure. It is sometimes referred to under inflammatory affections, but it is not at all certain that the disease is really of that nature. By some it is considered to be allied to rheumatoid arthritis, and no doubt the condition is found in many rheumatoid joints; on the other hand, a most extensive papillomatous condition of the synovial membranes may be met with without any other sign of rheumatoid change in the joints, or without, as far as present experience goes, that condition supervening later.—C. J. RINGNELL in *The Journal of the Minnesota State Medical Association*.

THE OPERATION OF DIRECT BLOOD TRANSFUSION—DESCRIPTION OF A SIMPLE METHOD*

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A considerable period of time is always needed to determine the exact value of any new therapeutic measure. While the direct transfusion of blood in the human subject is a procedure which has been known to medicine and surgery for a great many years, its application has become general only in very recent times. One reason for this is, that by all the older methods a faulty technic was responsible for many deaths by embolus, and a second is, that the measure was superseded by the very simple and safe one of infusion with one of the saline solutions.

Infusion, however, does not meet all the indications, and therefore our debt to those experimenters and clinicians who have put transfusion on a sound basis is a great one. The operation as detailed by Carrel and Crile has now been in general use for two years or more, and the cases operated upon are sufficient in number to make their analysis a matter of importance.

The study of any surgical treatment comprises a consideration of its indications, its technic, its dangers, with the means of guarding against them, and finally its value in curing disease. With the indications for, and the value of blood transfusion, we shall not deal at this time, except to say that the experience of the last two years shows that there are manifold pathological conditions in which it seems indicated, and which to a greater or less degree have been favorably altered by it. After the lapse of another two years we shall be in a better position to arrive at definite conclusions as to when it may be safely used with the hope of positive benefit.

This paper deals with the technic of direct blood transfusion and its dangers, with the means of guarding against the latter. The improved method of end-to-end suture of the donor's artery and the recipient's vein as practised by Carrel, gives perfect results in animals, and has been used with success in the human subject. It is an operation, however, of very difficult execution, and in the hands

of many surgeons has failed because of the formation of a clot. Its success depends on the most rigid asepsis—Carrel and Sweet attributing the failure usually to an error in this—and a most careful attention to every detail. The employment of the greatest gentleness in handling the vessels is a *sine qua non*. The needles used are so fine as to tax the sight and the tactile dexterity of the most expert. The silk must be carefully selected, of the same caliber as the needles, and it must be soaked in vaselin. To surmount the difficulties inherent in this operation, an extensive experience on animals is necessary, and even then the surgeon finds his first case in the human subject a cause for congratulation if he succeeds.

These considerations have led to an effort to find some simpler method for the vascular union, and a number of different mechanical devices have appeared. Crile modified the canula of Payr by attaching a handle to it, and circumscribing it with small rings for the better holding of the ligatures. It was the publication of his results which gave a new impetus to the use of the operation. The method is ideal in that it brings the normal intima of the vessels in contact without the interposition of any foreign body. This does away to some extent with the danger of clotting. There is an objection to it, however, in that the lumen of the vein is constricted by the thickness of its wall where it is cuffed back over the end of the canula. If a large enough canula is used to make this a matter of no consequence, the artery is often too small to be easily drawn over the canula and the turned back vein. To overcome this drawback, some operators have passed the artery through the canula and turned this back, placing the vein on the outside.

The greater thickness of the arterial wall, however, still more constricts the lumen, and the delivery of blood through it is hardly larger than a pin in diameter when the radial artery is used. Unless the slack in the vessel where it passes through the canula is completely taken up, a still greater lessening of the caliber results, and may even stop the flow altogether.

None of these objections holds in the dog, because the carotid artery and the jugular vein are both thinner, and of larger caliber than the vessels available in man. A consideration of the results obtained in the series of cases here presented, and the numerous modifications of the canula which have appeared during the past year, many of which have not yet been described in the literature, are ample testimony that some further simplifica-

* Read before the N. Y. Academy of Medicine, Section on Surgery, January 8, 1909.

tion is needed before the operation will be an accepted one in the hands of surgeons at large.

In the preparation of this paper, a circular letter was addressed to fifty-two surgeons connected with the various hospitals in New York City asking for their experience with the operation, and permission to quote it. Replies were received from forty-five, and to them the writer here wishes to express his indebtedness. Their names will not appear because many of them are desirous of publishing their cases in full at a later date. Of the forty-five, twenty-seven had no experience, and eighteen have done the operation one or more times, seven being the greatest number reported by any one surgeon. The total number of operations recorded is forty-three, which, with five done by the writer, gives forty-eight from which to draw our conclusions. Of this number, only six were done with the suture. Two of these were done by the writer with partial operative success; that is, a certain quantity of blood entered the vein, but clotting took place before all that was desired had passed the anastomosis. In the other cases, failures are recorded because of immediate clotting.

Forty-one were done with the canula. Twenty of these, practically one-half, were recorded by the operator as either failures or only partial successes; that is, there was either no flow of blood, or a less quantity than was desired. In twelve of the twenty no flow whatever took place. The cause of a lack of success was due usually to clotting of the blood, though in one case the radial artery contracted so tightly that no blood would flow through the unimpeded cut end—a condition which Crile has noted. The remaining case, done by the writer after the method to be described, was a success. The time during which the blood was permitted to flow, after the anastomosis was complete, was from twenty minutes to about one hour. The fact that more than forty-five minutes is ever required proves that the flow must be very small, otherwise the donor would become exsanguinated. In a number of the cases there was a great difference of opinion among those assisting at the operation, as to whether the blood was flowing or not, and if so, whether it was free or impeded. This is due to the fact that the small stream delivered into the artery does not distend the vein. It would seem an easy matter to temporarily obstruct the artery, empty the vein by milking it toward the heart, and then with the central portion of the vein obstructed, note whether it fills on releasing the artery. Any one who has tried it, however, will be struck by the doubt in his own mind in many cases.

The majority of surgeons from whose cases the above facts were obtained, expressed themselves as of the opinion that the operation should be classed as one of especial difficulty. A few, however, had no trouble with it, and were successful in all the cases they had operated upon. The writer's experience was not a satisfactory one.

In Case I the donor was a healthy young man of robust build. The recipient was suffering from the results of secondary hemorrhage and sepsis. The Crile canula was used, and an apparently satisfactory anastomosis was made with no especial difficulty. Close inspection of the vein seemed to demonstrate a flow of blood into it, yet there was no evidence of loss of blood by the donor at the end of fifty minutes. The vein was then cut centrally to the canula and no blood was flowing. The subsequent condition of neither participant indicated that any great quantity of blood had been transfused.

Case II. Sarcoma of the leg in a boy of 16 years. Refused amputation. Donor, healthy man. Suture method. In this case some blood undoubtedly flowed into the vein, as indicated by a positive and negative change in blood pressure in the donee and the donor respectively. It was, however, unsatisfactory, and at the end of fifty minutes the vein was cut, and a clot found in the anastomosis, but not completely occluding the lumen.

Case III. Same as case II. Three weeks later, suture method, satisfactory. All agreed that a good stream of blood flowed for thirty minutes, and there was a rise of blood pressure in the donee of 20 m.m. and a corresponding fall in the donor. On testing the anastomosis, however, by cutting the vein, at the end of fifty minutes, only a dribbling stream of blood was found to be passing through it.

Case IV. Woman. Severe anemia. Patient of Dr. Freeman of Orange. Donor, the husband. Buerger canula used. Great difficulty experienced in making a satisfactory anastomosis, various factors, which a larger experience would remedy, contributing. All who took part in, or watched the operation, except Dr. Freeman, were of the opinion that the blood flowed for a considerable time. But no material change in either blood pressure or hemoglobin of the patient took place, and the case cannot be considered as a successful one. In the two cases where the canula was used by the writer, the artery was passed through the canula. They cannot therefore fairly be counted as failures with Crile's method. This was done because of the diffi-

culty in getting the artery over the canula as above mentioned.

These four experiences, and many of those cited above, which had been verbally reported to the writer by the operators, led to an attempt to devise some simpler and more certain method for the transfusion of blood, and it is that method which is here presented for consideration. It has the advantage of needing no special instruments, and no unusual skill in operating. It delivers a free stream of blood which is easily controlled, and is, we believe, free from danger.

The radial artery of the donor is dissected out for a distance of two inches, or more if convenient, under cocain anesthesia; the small branches are isolated and tied, and a ligature is thrown around the distal end, but not tied. The wound is covered with a moist, warm pad. An accessible vein in the forearm of the recipient, below the bend of the elbow, is similarly exposed for the same length. If possible, a small tributary is dissected free for one inch at some point central to the proposed site of anastomosis. This is loosely clamped at its distal end. A ligature is then tied around the distal end of the main vein, and the vein divided just central to it. If needed, a light obstructing clamp is put on the vein higher up, but it is not always required. The adventitia is carefully stripped from the cut end of the vein as described by Crile, and three sutures of fine silk, impregnated with vaselin, are passed through the media and intima at a distance of 120 degrees on the cut circumference of the vein. The wound is then covered with a moist warm pad. The silk need not be finer than the ordinary No. 0, and the usual fine round intestinal needle answers every purpose. The artery ligature is now tied, an obstructing clamp gently placed on its central exposed part, and the artery divided with sharp, fine scissors just above the ligature. The adventitia is removed from the cut end, and then a small roll of it is slid upward along the artery, for a distance of an inch or more, and left attached. Through this a silk suture is passed, tied, and cut about half an inch long. If possible, a small branch of the radial, at about one inch from its cut end, may be left long enough to take the place of this roll of adventitia. The artery is then immersed in liquid vaselin, and by means of a small forceps, gently grasping it at about one inch from its cut end, it is passed directly into the mouth of the vein, which is held open with the three sutures. The arterial wall is sufficiently rigid to make this step very easy. One, or if need be two, of the venous sutures are then clamped either to

the suture in the adventitia, or to the radial branch, in order to prevent the separation of the two vessels, and the excess of venous circumference clamped so as to snugly hold the artery, but not to constrict it. The obstructing clamps are then removed, and the flow proceeds.

Crile has called attention to the danger of overburdening the right heart, if the blood flows too rapidly, and one case in this series suggests its having happened. Digital pressure on the artery controls absolutely the rapidity of the flow. If there is at any time a question of the success of the transfusion, the clamp from the venous tributary is removed, when the arterial blood will be seen to spurt from the cut end. Experiments on dogs show that there is no tendency for fringes of clot to form around the cut end of the artery if it is well coated with vaselin. One precaution which can be more readily observed here than in the use of the canula or suture method, is the avoidance of air emboli. Both artery and vein can be filled with fluid blood just prior to the anastomosis, by removing for a second the obstructing clamps. The method has now been used many times in the dog with great ease and perfect success. The only opportunity to use it clinically was in Case IV, when it was done four days following the first attempt. It was very easy of execution. A small radial branch was used for clamping the vein suture to, as well as the roll of adventitia. The tributary vein was accessible, and an arterial spurt of blood several inches high would pass through it when the full force of the radial flow was allowed to enter the vein. This indicator is of great value when it can be used, because it at once dissipates all doubt as to the patency of the anastomosis. On this occasion the radial artery was controlled by digital pressure for fear of overburdening the right heart. The anastomosis continued for forty-five minutes and was then still very efficient, as shown by the venous indicator.

The order of procedure given above, that is, to first expose the artery, but not clamp or cut it, then to prepare the vein, and finally come back to the artery, is advisable. The first step is done on the donor, and if desirable, the patient proper need not be present until it is finished. The reason that it is inadvisable to complete the arterial work then is that the longer clamping and exposure of the artery, while the vein is being prepared, may help to bring about its contraction so as to conclude the blood flow. The changes in the condition of both the participants was in marked contrast to those observed on the first occasion, demonstrating the

loss of all the blood the donor could lose—in fact, more than he could safely lose as noted below.

A modification of the above method has been performed in dogs by passing the artery into a longitudinal slit in the wall of the vein. It is very easy of accomplishment in this animal in which the artery is much less rigid than in man. No opportunity to try it clinically has yet occurred.

Beside the actual method of performing the anastomosis, a second factor in the technic of the operation is important, namely, some method of actually estimating the amount of blood transfused. Various means have been tried to indirectly determine this by observations on the condition of the donor and donee. Estimation of the hemoglobin is one of these. The hemoglobin of the donor will not materially change during the operation, because in so short a time the fluid is not sufficiently absorbed to show the true loss in hemoglobin per cent. An increase in the hemoglobin of the donee shows an undoubted successful transfusion. There is no close relation, however, between the increase in coloring matter and the actual amount of blood received. It would seem possible, if we knew the hemoglobin content of each participant to start with, the total amount of blood in the donee, and the hemoglobin per cent. of the latter at the end of the operation, to work out, by formula, the amount of the donor's blood required to give the increase in hemoglobin noted. Each of these factors can be determined, the hemoglobin by the colorimetric test, and the blood quantity by the carbonic oxide test of Haldane and Smith. Some experiments are being done now by the writer to prove the efficiency of this method. So far as yet determined, however, certain unknown factors seem to enter into the problem which will vitiate the obtaining of accurate results. Enough has been already done to show that nothing can be learned by using the estimate of one fifteenth of the body weight in dogs as giving the weight of blood. This is the average as determined by many observations, but the individual variation is so great as to vitiate the findings. In man, Haldane and Smith found a variation from one-twenty-fifth to one-sixteenth, with an average of one-twentieth of the body weight as representing blood weight, using normal individuals of average nutrition. In unusual nutritious conditions and disease the variation is still greater. The variations in the number of corpuscles, red and white, is open to the same objections.

A second method for determining the amount of blood transfused is to note the alterations in blood

pressure and pulse rate in the participants. The unknown factors here are obviously too great to give any accurate knowledge, though a marked change in these functions indicates a successful transfusion.

A third method is by weighing the participants before and during the operation. This would require a specially devised scale of great delicacy on which the operating table could be fitted. Such a scale is not available for general use. Weighing before and after the operation would, of course, give very accurate data concerning the point in question, but what is needed is a method which can be applied during the operation.

Using the method described in this paper, it may be possible to uncouple the vessels, lift the donor on the scales, weigh him, and, if indicated, replace him on the table and reunite the vessels. This whole procedure would not require more than five minutes and the ordinary scales would answer every purpose.

A fourth method is that of measuring in a measuring glass, the blood which flows from the donor in a given time, and estimating from this the amount flowing into the vein after anastomosis. This fails because many variations in the rate of flow occur after union of the vessels. Tests made in the laboratory showed that the flow before anastomosis is much greater than that after anastomosis.

At present, then, we have no accurate means of determining the actual quantity of blood used. We must depend on all the above methods, and be guided by general considerations of change in hemoglobin, cell count, pulse rate and blood pressure, for determining when the donor has given all the blood which is within the limits of safety.

Continuous enteroclysis should be given to the donor during the operation, or a saline infusion at its termination. In one case, that in which the artery-within-the-vein method was used, it was thought we were well within a safe limit, but a rather severe condition of collapse occurred four hours after the operation.

The dangers to the recipient attending the operation fall under four heads: first, a hemolytic action of one blood on the other; second, the entrance of blood or air emboli into the circulation; third, the use of a donor who has some undemonstrated communicable blood disease; and fourth, overdilatation of an enfeebled right heart. The question of the first danger—hemolysis—is one which must be constantly borne in mind in the operation of transfusion. Where sufficient time can be taken for

testing this; it should never be omitted, because *a priori* it is not safe to conclude that in any case corpuscular destruction will not take place. When the operation is done for a hemorrhage occurring in a previously healthy person, the danger of hemolysis is undoubtedly small, and the urgency of the case may contraindicate any delay for testing the two bloods. But in all pathological conditions of the blood, the disintegration of the red corpuscles may be very great. In one case in this series, death resulted in a few hours after the transfusion, from very extensive hemolysis. Patients with primary and secondary blood diseases, and sepsis, seem particularly liable to this accident.

The second danger, the possibility of a clot or an air bubble washing away from the site of anastomosis and producing an embolus, must not be lost sight of. There is no positive record of its having happened in this series, but in one case the symptoms suggested this as a probability. Care in the technic is the only safeguard we have against this, and further experience may show that it will happen even in spite of such care.

The third danger, that of using a donor unfit for the purpose, ought never to be in actual evidence with proper care. Too great hurry in a desperate case might, however, lead one into such an error.

The fourth danger, that of injuring the right heart, has already been considered, as has the means of avoiding it.

The operation is without danger to the donor unless, in our, and possibly his, desire to help the recipient, we carry on the transfusion for too long a time. His discomfort will, however, be less if we replace immediately the blood lost by normal saline solutions.

While this paper includes only a study of unpublished cases placed at my disposal by the operators, and my own experience, it may be proper to say one word concerning the cases reported. Thirty-eight of these have been analyzed, practically all of which were done with the canula. The results are almost invariably favorable so far as the success of the technic goes, only four unsatisfactory results having been recorded. One reason for this is found in the fact that nearly all the reported cases have been done by men with a very large experience in animal surgery, and in the hands of such men any method will prove successful. Again, our failures are less urgent than our successes in the matter of publication.

Conclusions:

1. The operation of direct blood transfusion as practiced with suture and canula shows a large per-

cent. of unsatisfactory results. It requires special instruments and unusual skill for its successful execution.

2. The direct entrance of the artery into the vein in a large series of experiments and in one clinical case.

3. At present we have no means of obtaining accurate knowledge of the quantity of blood entering the vein. The changes in hemoglobin, red cell count, pulse rate and blood pressure must all be given weight in estimating this quantity. Actual weighing of the donor may solve the problem.

4. The operation is not without danger from hemolysis, embolus or overdilatation of the right heart, but with proper care these should be avoidable.

In closing, the writer wishes to express his thanks to Dr. Jameson for aid in the preparation of the paper, and to Drs. Wheelwright and Cooke and Mr. Cowan for aid in the laboratory.

All the animals used in the work were fully anesthetized with ether.

50 EAST FIFTY-THIRD STREET.

THE AVOIDANCE OF HEMOLYSIS IN TRANSFUSION.

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The practice of the transfusion of blood in human beings has attained a considerable degree of prominence within the last two years, owing to the improvements of surgical technic introduced by Payr of Graz and Crile of Cleveland. These transfusions have in a number of instances been succeeded by very alarming symptoms, and even by the death of the patient. A typical case of such a death is recorded by Pepper and Nisbet. The patient was a man of 33, suffering from "some obscure type of hemorrhagic disease." His hemoglobin was 20 per cent., his red cells 970,000. He received a transfusion from donor A, which improved his blood, and appeared to benefit him. Two days later, he received another transfusion from donor B. This was immediately followed by a rise of temperature, jaundice, hemoglobinuria, and swelling of the spleen. After five days he died. Other cases are reported

by Watts, Crile, and others. In none of the recorded cases were any tests made to determine the compatibility of the two bloods, preliminary to the performance of the transfusion.

We desire to contribute an additional case of hemolysis due to transfusion, and to indicate the precautions necessary to avoid that result. The clinical features of this case will be described in detail in a subsequent article by Dr. Rehling.

The patient was a man twenty-seven years of age, suffering with splenic anemia. His blood count showed 1,840,000 red cells. The hemoglobin, as estimated by Tallquist's scale, was 10 per cent., as estimated by Fleischl's hemoglobinometer, 15 per cent. Preparatory to splenectomy, it was deemed advisable to transfuse the patient. A preliminary test of the blood of the patient and of that of the intended donor indicated, as will subsequently be described in detail, a slight tendency of these two bloods, when mixed in the test tube, to undergo hemolysis. In spite of this fact the transfusion was performed. The rather small radial artery of the donor was connected with the median cephalic vein of the patient, and the flow was allowed to continue for sixty-five minutes. At the end of this time the patient developed a severe chill. The hemoglobin of the patient, as measured by Fleischl's instrument, had been increased to 24 per cent. when the operation was finished. One hour after transfusion, the patient passed about 150 cc. of dark blood-stained urine. After this, he passed urine at frequent intervals for 12 hours, during which time the degree of bloody discoloration gradually diminished. After 12 hours he passed no more bloody urine. The examination of this urine revealed the presence of albumen; no red blood cells microscopically; and, chemically and spectroscopically, a heavy admixture of hemoglobin. Four days after transfusion the hemoglobin had sunk to 21 per cent. according to Fleischl's hemoglobinometer. Splenectomy was then successfully performed.

The especial value of this case lies in the fact that it affords clinical evidence of the reliability of the laboratory reaction which was made to determine the compatibility of the two bloods involved. Indeed, although the result of the reaction was positive in only a slight degree, the clinical result demonstrated that such slight results must be regarded as serious warnings, or, rather, as indicating the employment of a different donor. The test was performed as follows: Five cubic centimeters of blood were aspirated from one of the veins at the elbow from each patient. Of this blood, one cubic centimeter was expelled into a tube containing four

cubic centimeters of a one per cent. solution of sodium citrate. The remainder was passed into sterile test tubes and allowed to clot. The citrated blood, which does not clot, was centrifugalized in graduated tubes, and the corpuscles were washed four times by successive centrifugalizations in fresh salt solutions. The object of this procedure is to remove the last traces of native serum. After the fourth centrifugalization, the cubic volume of the centrifugalized cells, as determined by the graduations on the tube, was noted, and the cells were suspended in fifty times their volume of isotonic (0.85 per cent.) salt solution, giving a four per cent. suspension. From the tubes containing the clotted blood, serum was poured off. The test was performed in the following manner. The serum of each individual—donor and patient—was tested against the corpuscles of the other, one cubic centimeter of each being used. In addition, the red cells of both donor and patient were separately tested, as controls. Eventually, there were four test tubes, as follows:

1. One cc. of the patient's serum, plus one cc. of the donor's red cells;
2. One cc. of the donor's serum, plus one cc. of the patient's red cells.
3. One cc. of the suspension of patient's red cells.
4. One cc. of the suspension of donor's red cells.

These tubes were subjected to the temperature of the incubator (100 degrees F.) for two hours, and then placed in an ice-chest over night. The presence or absence of laking was noted the following morning.

It was found in this case that tube number one showed a slight degree of laking, indicating that the serum of the patient was capable of destroying in the test tube a certain number of the corpuscles of the donor. If the figures be analyzed, and expressed in terms of the whole blood, the result would indicate that two cubic centimeters of the patient's blood, when diluted with an equal volume of salt solution, was capable of destroying a portion of one-tenth cubic centimeter of the red cells of the prospective donor, when diluted with twenty times the volume of the latter in a mixture of salt solution and serum. It is evident that it is somewhat of an assumption to argue from a test tube reaction of this character to the probable result of a transfusion. This assumption will be analyzed in detail later on. For clinical purposes it had been assumed by us that the test tube reaction could be accepted as a guide to the results of the transfusion. In a

series of eight previous tests of this character on the bloods of patient and donor, no hemolysis had ever been noted, and there had been no clinical evidence of hemolysis after transfusion. In this case the presence of so slight a reaction seemed to offer no sufficient objection, and the transfusion was performed. The result has already been described.

In view of the intra vitam confirmation of the reaction in vitro, it may be interesting to indicate the limits of validity in the inferences drawn from the latter to the former. It may at once be admitted that the use of the serum and of washed red cells introduces a set of factors totally different from those maintaining in the body; neither serum nor washed red cells, as such, actually enter into the reaction when a transfusion is performed. Unfortunately, it is impossible to avoid this difficulty, and, as will be subsequently shown, it does not actually invalidate the result. The second possible objection lies in the fact that the proportion in which serum and blood cells are mixed does not duplicate that in which the mixture occurs at transfusion. This is a factor of error which cannot be eliminated; moreover, it can only affect the degree, and not the quality of the reaction. Finally, the dilution of the patient's serum with an equal quantity of salt solution, by the introduction of an equal quantity of the red cell suspension of the donor, introduces a factor entirely foreign to the transfusion. This has been obviated in more recent work by a procedure employed by one of us (Weil) in routine work on hemolysis, namely the use of a 20 per cent. suspension of red cells, which makes it possible to dilute the serum of the patient with only one-tenth cubic centimeter of the red cell suspension. This certainly makes a closer approximation to the conditions which maintain in transfusion.

It may be stated that it would be an even greater refinement in technic, and a closer approximation to the vital conditions, if the red cell suspension used in the test were made up with their own sera instead of with salt solution.

It now remains to consider the justifiability of an inference from a reaction performed with serum and washed cells in the test tube, to the resultant of a mixture of the whole bloods within the bloodvessels. It is evident that there can be only an empirical justification for such an inference. Several years ago, when the procedure of transfusion was first introduced, a series of experiments was done by one of us (Weil), in conjunction with S. P. Beebe, to determine this point. It had been shown that the serum of dogs with advanced lymphosarcoma was fre-

quently hemolytic for the washed red cells of normal dogs. An animal possessing a serum of this character was transfused with the blood of a normal dog, whose corpuscles had been shown to be destroyed by the serum of the former in vitro. No hemoglobinuria resulted. On the other hand, for several days the urine of the recipient was intensely stained by urobilin, which was interpreted as indicative of a heightened destruction of the red cells (pleiocholia). The same result was repeated in a second case. Recently one of us (Weil) has tested the assumption in another manner. A segment about four inches long of the external jugular vein of a dog was segregated by ligatures at both ends, the blood not being removed from the vein. An injection of one-half cubic centimeter of eel serum was then made into the vein by means of a hypodermatic syringe. Eel serum, it should be premised, is intensely hemolytic for the washed red cells of the dog in the test tube. After four hours, the blood was aspirated from the vein, drawn into a citrate solution, and immediately centrifuged. The supernatant plasma was markedly stained with hemoglobin, while the control blood, drawn from a vein treated in the same way except for the injection of eel serum, showed no change. In two subsequent experiments, the vein was treated as described, but into it was injected, instead of eel serum, the blood of a cachectic dog suffering with lymphosarcoma, together with a small amount of sodium citrate to prevent clotting. As a control, injections of the blood of a normal dog were made into the opposite vein. In the former case the supernatant plasma after centrifugalization was distinctly tinged with hemoglobin; in the controls this did not occur. It is evident, therefore, that to some extent the same reactions occur with the whole blood as with the serum and washed corpuscles.

To sum up, the test tube reactions, in spite of the differences in conditions, appear to afford a reliable criterion of the results of the intended transfusion. This fact has been verified experimentally on dogs, and once in a human case. It seems advisable, therefore, that every transfusion should be preceded by such tests.

MILD APPENDIX CATARRH.

Recent work has shown that mild grades of inflammatory change in the appendix are of extreme frequency. Krönig, who systematically removed the appendix at every laparotomy, found that in only 50 per cent. was it absolutely normal.—EVERETT O. JONES in *Northwest Medicine*.

FIBROSIS UTERI AND ITS SURGICAL TREATMENT BY A NEW METHOD OF VAGINAL HYSTERECTOMY.

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NEW YORK CITY.

There is a condition of the uterus, to which I have given the name fibrosis uteri, characterized by a diffuse fibrotic change in the entire thickness of the uterine wall and in the cervix, as a result of which the uterus is elongated, wider and thicker than normal. This fibrotic alteration is recognized during operation by the fact that the volsellum forceps, when grasping the uterine wall, break through it because of the brittleness of the tissue, and the pale pinkish yellow color of the broken areas resembles in every particular the appearance noted in fibroids in the uterus.

Microscopic sections show the muscularis to be invaded by regular and irregular bundles of fibrous connective tissue, so that in many areas this tissue fills the entire field of observation. Arteries and veins are very much dilated, their walls are thickened, and frequently the intima shows alteration of a typical nature. The contractility of the muscle fibres is altered, the interstices have been filled by this new growing tissue, and combined with this is a disappearance of the numerous elastic fibres of the uterus. The uterus has lost its contractile power, the vessels have been affected in a like manner and the added loss of the contractile force of the elastic fibres tends to a ready bleeding from the uterine mucosa and to diminished ability to control this bleeding.

The pre-menstrual congestion which takes place throughout the whole genital tract and especially in the uterine wall and in the mucosa normally to a climax slowly and steadily. The final result of the congestive climax is the outpouring of blood. The normal uterus with well conditioned muscle fibres, with elastic connective tissue, and with elastic capillaries, resists for a period of twenty-eight days this congestion which ends in the expulsion of blood. Such a uterus limits the hemorrhage within the course of four or five days by the contractility of the muscular fibres and of the elastic fibres and of the capillaries.

If the muscular fibres, the elastic fibres, or the capillaries have lost, to a lesser or greater degree, their ability to contract or their ability to resist the congestive influence of the pre-menstrual period, bleeding either comes on sooner, or, when it comes, lasts longer. This, of course,

implies well functioning ovaries producing the congestion which characterizes menstruation. The vast majority of these cases show ovaries which are large and plump. They evidence numerous follicles and possess the full power of the ovarian secretion to promote pelvic congestion. As a re-

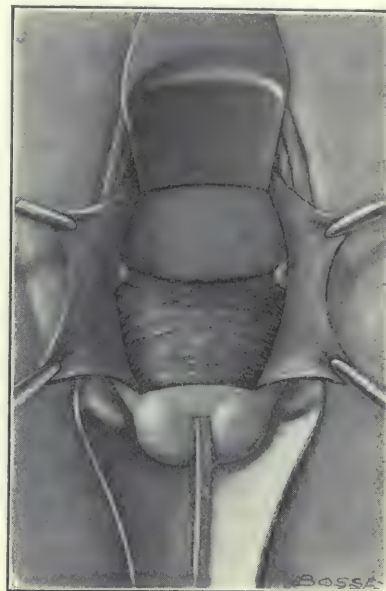


Figure 1.

sult of structural fibrotic uterine changes, since the ovaries are functioning, the menstrual congestion results in increased frequency of menstruation, in increased loss of blood and in increased duration of the menstrual function. In many cases menstua-

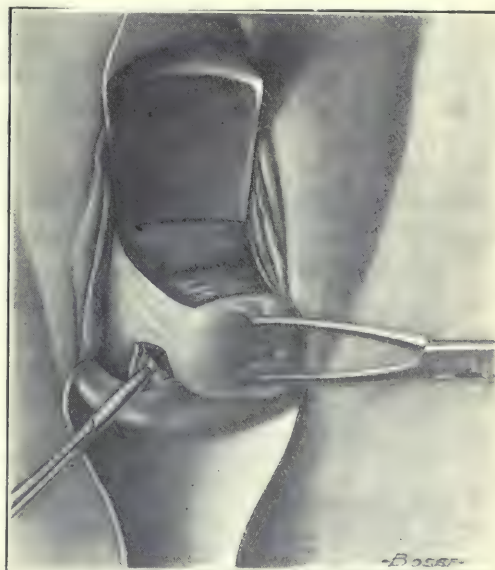


Figure 2.

tion is no longer regular, passing from the type of menorrhagia to the type of metrorrhagia. Most of these cases of fibrosis occur in women in the late 30's and in the early 40's. These women are stout



Figure 3.

and well built, and the menopause, if allowed to come of its own accord, may only result after the lapse of many years.

As a result of the increased loss of blood and the tendency to the formation of clots, the blood does not find ready exit through the cervical canal, the walls of which are hard and fibrotic, and painful menstruation is a very frequent complication. Nervous phenomena of pronounced type are among the annoying symptoms. There occurs in many cases what may be known as consti-

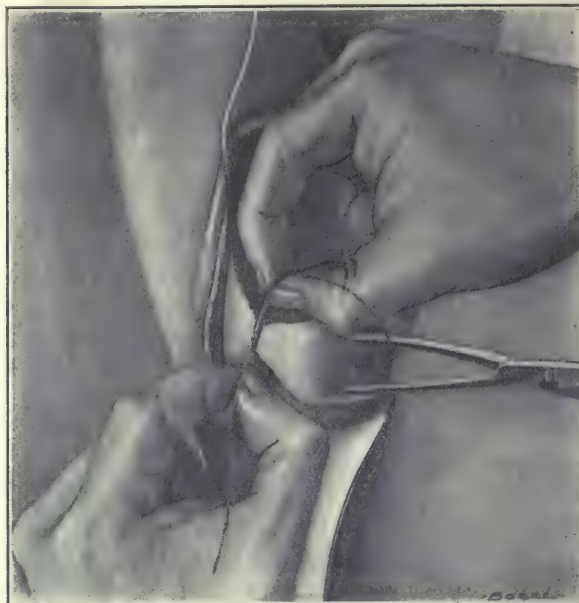


Figure 4.

tutional dysmenorrhea. For several days before menstruation and during the menstrual period, congestion involves the entire nervous system, the various mucosae of the body, and produces a sensation of fulness in the head, dizziness, nausea, anorexia, irritability, palpitation of the heart, restlessness and sleeplessness. These annoying symptoms, the painful menstruation and the great loss of blood often reduce these patients to a state of marked physical and nervous asthenia. While in many instances this uterine and constitutional condition results after two or three cases, in the majority of cases there is a history of frequent labors and often of several abortions. In all probability the element of subinvolution after frequent labors or abortions, plus the associated congestion resulting therefrom are the



Figure 5.

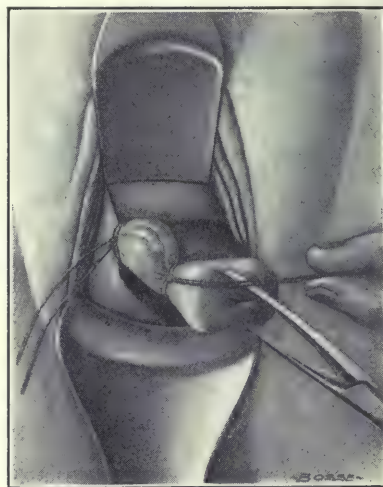


Figure 6.

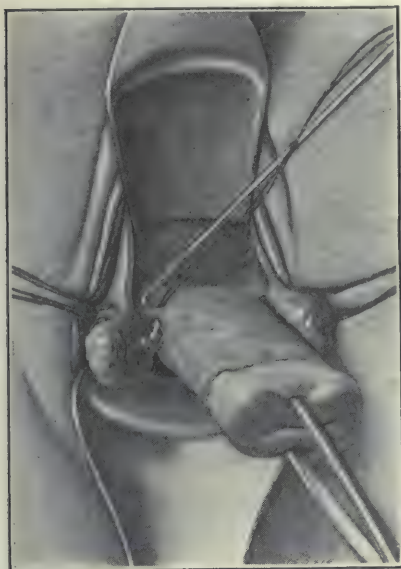


Figure 7.

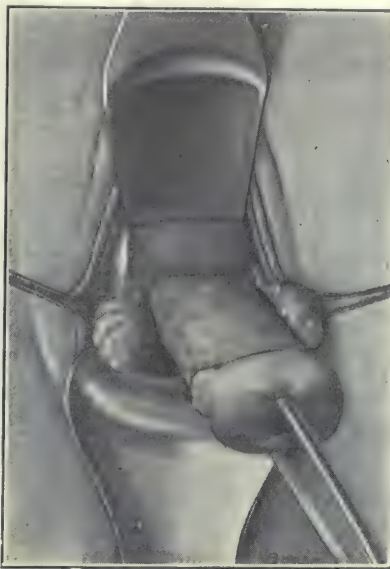


Figure 8.

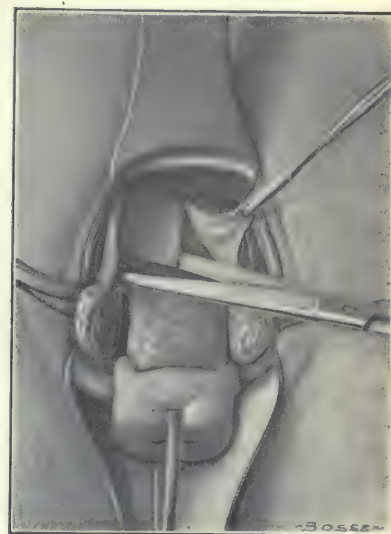


Figure 9.

etiological factors which lead, after the lapse of several years, to fibrotic structural changes in the tissue elements which make up the uterine wall. Prolonged congestion in the pelvis, altered circulation in the uterus and adnexa, and a general state of inelasticity are associated factors. There seems to be in certain women a tendency to an alteration of the normal elastic fibres of the uterus and their replacement by fibrous connective tissue, a condition which was well illustrated microscopically by the investigations of Pick. The uterine mucosa is, as a rule, in these cases not hyperplastic, so that endometritis *per se* is not an important point in the causation of these prolonged profuse bleedings.

The medical treatment of this fibrotic alteration of the uterus includes anything which may increase the contractile power of the uterus, which may diminish the size of the uterus, which may diminish the congestion in the uterus and in the pelvic structures. Among the drugs which are of value are the various preparations of ergot, adrenalin, etc. Among the therapeutic measures are the intra-uterine use of the positive electrode, the use of short, hot douches, the regular and systematic daily use of sitz baths of such temperatures as tend to permanently diminish the pelvic congestion.

Among the milder operative procedures are to be included very thorough curettage, and the use of steam with or without the preliminary use of the curette. With any of these various combinations plus rest and the avoidance of exertion, particularly before and during the flow of blood, many of these patients may be so markedly improved after months or years, that further intervention may be avoided.

In many of these cases, even after temporary improvement of various durations, the trying annoyances recur. In a goodly proportion of cases the patients belong to that social scale which precludes the possibility of rest and the avoidance of exertion. Thereby one of our most important therapeutic measures is denied us. In other cases, the patients find that the treatment which is necessary and the rest which is demanded interfere too much with their family and social obligations, and prevent the leading of a life which is pleasurable and enjoyable.

The remedy which absolutely prevents the various combinations of symptoms is vaginal hysterectomy without removal of the ovaries. In this way unbearable hemorrhage is prevented; and the regular or irregular recurrence of the condition known as constitutional dysmenorrhea is at an end. (*Retention of the ovaries avoids the occurrence of constitutional symptoms of the climacterium.*)

Operation.—The following method of simple vaginal hysterectomy has been practiced by me in over 110 cases without a fatality:

The cervix is grasped by a heavy pair of volsellum forceps and is pulled forward so that its posterior wall is exposed. A transverse incision is made through the vaginal mucosa about an inch above the external os. The upper margin of the incision is grasped by a long mouse-toothed forceps and a pair of scissors dissect off the vaginal mucous membrane by short snips passing through the connective tissue bands which connect the vaginal mucosa to the structure of the cervix. A long pair of artery forceps than grasps the upper margin of this posterior

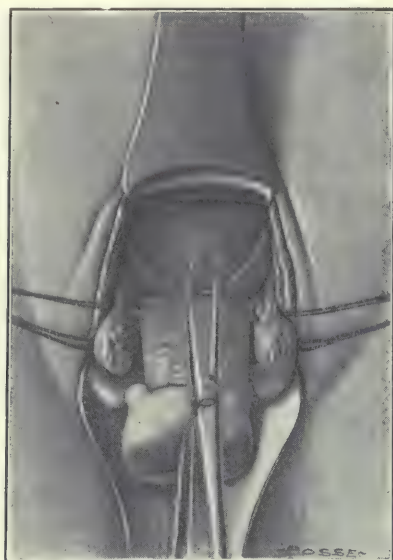


Figure 10.

incision and the finger separates the vaginal mucosa and the connective tissue still further from the cervix until the cul de sac of Douglas is distinctly felt. The cul de sac of Douglas is then perforated with the index finger, the finger is introduced into the peritoneal cavity and the peritoneum is hooked by the finger tip and brought down so that a long pair of forceps placed at the lateral margin of the incision unites the peritoneum with the edge of the vaginal mucosa. The same thing is done on the other side, so that the peritoneum and vaginal mucosa are held together at the lateral borders of the primary incision. These two forceps are of importance in that each limits the bleeding to a marked degree and serve to mark a point around which one of the final closing sutures is passed. The next step consists in making a transverse incision on the anterior wall of the cervix, the ends of which almost, but not quite, join the ends of the posterior incision. Two artery forceps are applied to the middle joint of the upper lip of this incision and by traction the connective tissue bands which unite the bladder to the anterior wall of the cervix are brought into relief. Some of these are cut with snips of the scissors, and then the index finger, covered with gauze, separates the bladder from the anterior wall of the cervix and uterus up to the vesico-uterine pouch of peritoneum. The two artery forceps being then put upon the stretch, a pair of long sharp pointed scissors is introduced between the vaginal mucosa and the bladder and the anterior vaginal wall is progressively incised for a longitudinal distance of $3\frac{1}{2}$ to $4\frac{1}{2}$ inches. Each artery forceps is then grasped in turn and with a

slight rotation the vaginal mucosa is everted, a few snips with the scissors start the separation of the bladder from the vaginal mucosa and the subsequent complete separation of the bladder from the vaginal wall is carried out with the index finger covered with gauze. These steps are the same as those in the performance of vaginal celiotomy or vaginal fixation for prolapse of the uterus. These steps being completed the bladder itself is held back by a retractor. In a fair proportion of cases the uterine artery can be seen on either side after thorough separation of the bladder. (Figures 1 and 2.)

A ligature needle threaded with large sized silk is then passed through the lower border of the broad ligament close to the uterus and below the pulsating artery (Figure 3). This silk passes out through the posterior incision, and is tied very firmly over the uncut lateral border of the vaginal mucosa. Before tying this silk a slight snip is made in the vaginal mucosa to furnish a groove in which this ligature and its knot may rest to prevent slipping in the course of the subsequent manipulation (Figure 4). The long retractor which pushes the bladder upwards makes it easy for the uterine artery to be seen just above the first silk ligature that has been passed; so the second silk ligature is passed just above the uterine artery which is usually exposed to the eye (Figure 5), and the end is brought out through the posterior incision, and the ligature tied one inch above the first one (Figure 6); another groove being made in the vaginal mucosa with the scissors to prevent slipping of the ligature. The same procedure is then repeated on the opposite side after which a pair of scissors cuts between the fastened silk sutures and the lateral borders of the uterus, sticking very close to the cervix.

The scissors cut up toward the uterine artery. Very short snips should be taken so that the uterine

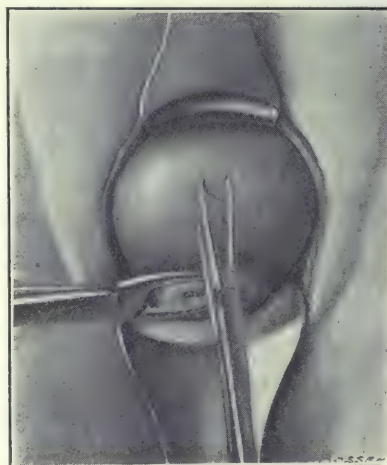


Figure 11.

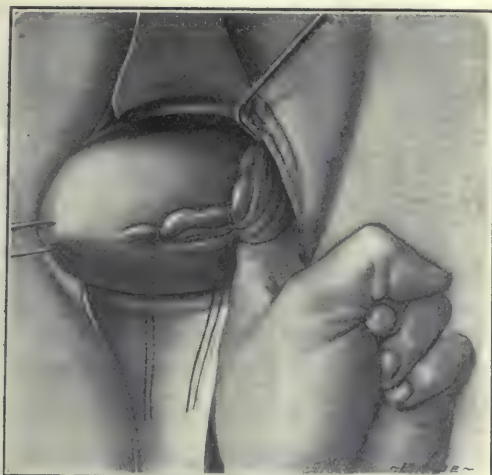


Figure 12.

artery may be recognized before it is cut if it lies deeply within the tissues which are being cut (Figure 7). Usually it lies close to the surface. In either event, if possible, it should be tied again before being cut through. This step is of value, for if by chance the uterine artery has not been caught by the second silk ligature applied as in Figure 6, it is essential that it be tied separately, and if as in the vast majority of instances the uterine artery is caught by the second ligature, the additional tying of the artery doubly insures us against any possible subsequent bleeding. (Fig. 8.)

After this step has been carried out the peritoneal cavity is entered anteriorly by incision of the vesico-uterine pouch of peritoneum (Figure 9). An anterior speculum is then introduced within the peritoneum and the anterior wall of the uterus is grasped



Figure 13.

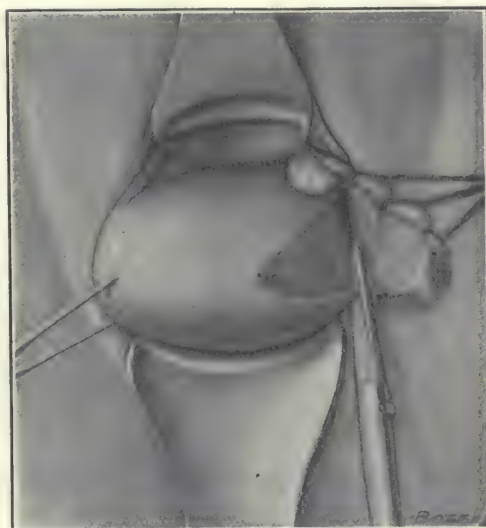


Figure 14.

by a pair of volsellum forceps (Figure 10). The cervix is now pushed back into the vagina, a wider speculum is introduced into the peritoneal cavity and the fundus is drawn out by successively applied volsellum forceps (Figure 11) until the fundus, tubes and ovaries lie outside of the vulva. Three silk ligatures are then applied on either side to solidly ligate the broad ligament. The first one is applied near the fundus and takes in about one-third of the width of the broad ligament; the second is applied external to this, taking in two-thirds of the width of the broad ligament, and the third external to this one takes in



Figure 15.

the entire broad ligament (Figures 12 and 13). When this is done the uterus is cut off and removed, the scissors passing close to the uterine structure (Figure 14). Both uterine arteries have already been thoroughly tied and fastened to the lateral margins of the vaginal wall. The upper part of the broad ligament including the outer half of the tube, the ligament of the ovary and the ovarian arteries forms a thick, compact band held on either side by the three silk sutures. Any small bleeding points are now caught and tied and the operation is practically completed.

A long strip of iodoform gauze is now introduced into the peritoneal cavity to hold the intestine up

Over the lower end of this strip which projects into the vagina, the five silk ligatures of either side are tied across in a double knot keeping this gauze in place and preventing its slipping out into the vaginal canal (Figure 17). The vaginal canal is then packed with a wide strip of iodoform gauze, the bladder emptied to make sure that the urine is clear, and the operation is completed.

The operation when done in a leisurely manner rarely takes more than forty minutes, the patient suffers scarcely any post operative annoyance. Owing to the pressure of the vaginal gauze on the urethra it is advisable for the first few days to ca-

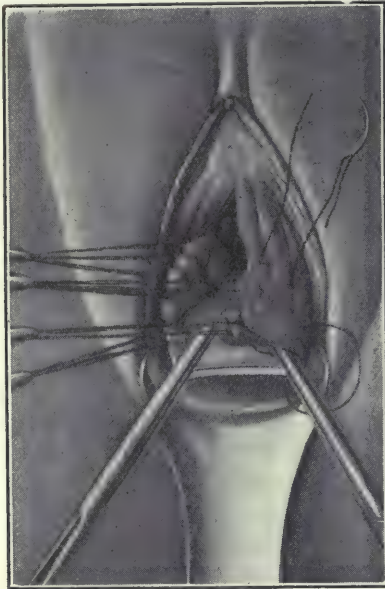


Figure 17.

out of the field of operation. A No. 3 chromic gut suture is now taken and passed as follows, with the aid of a heavy curved needle. It passes through the lateral margin of the longitudinal vaginal incision almost at its upper end, it then catches the ovary and broad ligament on its median side just near the attachment of the ligamentum ovarii, it then passes through the posterior vaginal wall and its attached peritoneum just median to the posterior clamp introduced at the beginning of the operation (Figure 15). It then passes through the lateral vaginal wall one-half inch above the silk ligature which caught the uterine artery. This suture is then drawn taut and tied firmly. As a result the entire thick upper portion of the broad ligament is attached closely to the lateral vaginal wall and is held outside of the peritoneal cavity (Figure 16). The same procedure is then carried out on the other side. The iodoform strip is drawn out and another wider, longer iodoform strip is introduced into the peritoneal cavity.

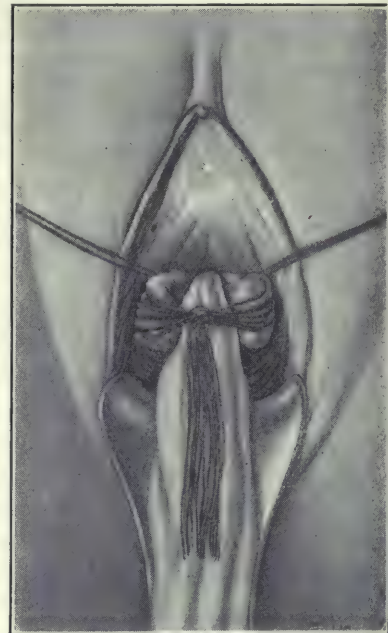


Figure 16.

thetize the patient. On the fifth day after the operation removal of the vaginal gauze is begun. The silk sutures which are tied over the intrauterine strip of gauze are no obstacle, and from this day on three to four inches of this wide intraperitoneal strips of iodoform gauze are drawn out each day. Finally, the vaginal fornix shows a cone-shaped denuded area containing the stumps of the broad ligaments. Daily vaginal douches are then given and in the course of a week or ten days complete healing and retraction has taken place. The value of packing iodoform gauze into the peritoneal cavity instead of closing up the edges of the vaginal incision is that because of the introduced gauze there is thrown out an exudation of lymph which eventually forms an artificial cul de sac of Douglas situated several inches higher than the normal one. It also prevents the intestine becoming by any chance adherent to the vaginal wound. These advantages diminish the

risk of the subsequent occurrence of a descent of the vagia, bladder, rectum, or the intestine. The purpose of sewing the lateral stumps of the broad ligament so firmly to the lateral borders of the vagina is that in the course of subsequent retraction of these stumps the lateral vaginal walls and bladder are pulled upwards and the occurrence of a cystocele or a descent of the intestine or a prolapse of the vaginal walls is reduced to a minimum.

134 WEST 87TH STREET.

DISLOCATIONS OF CERVICAL VERTEBRAE.

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Dislocations of vertebrae vary in degree. The most common are the slight subluxations which produce no pressure upon the cord, which give rise to more or less local discomfort, and which are important because the distortion is often great enough to cause pressure upon the spinal nerves passing out between the vertebrae. This pressure or irritation of the nerve trunks, in these more common cases, causes nerve disturbances which are referred remotely from the site of the lesion, namely, at the peripheral distribution of the nerves, and are manifested as peripheral pain, muscular weakness, or trophic derangements. These slight subluxations have been studied by Dr. Henry P. de Forest, of New York, to whom we are indebted more than to any other man for the descriptions of these conditions. He has shown by careful study of cases, by dissections of the spine, and by the treatment of a large number of persons with these subluxations, that they are quite common, and that they are responsible for many incorrect diagnoses. It is not my intention to deal in this paper with these subluxations.¹

Beyond these slight subluxations of de Forest's is every degree of dislocation up to the extreme lesions causing pressure or even destruction of the cord. All of these injuries occur most commonly in the cervical segment of the spine, because of the greater mobility of the vertebrae in this region and because of the lesser degree of tendinous strength and the lesser extent of bony apposition. These dislocations occur with or without fracture of the articular processes. Not enough cases have had post-mortem examinations and not enough *x-ray* inspections and plates have been made to determine

the relative frequency of fracture, dislocation, and fracture-dislocation. The best statistics available are those of Blassius.² But, in these statistics the results of *x-ray* examinations are wanting, and the diagnoses are necessarily speculative in many cases.

Most cervical dislocations are the result of extreme flexion of the head upon the thorax, the sternum often being broken by striking against the lower jaw. There must necessarily be rupture or separation of the intervertebral disk; and the ligaments are torn or separated, depending upon the character of the dislocation. In the anterior dislocations one or both articular processes may ride over the corresponding processes of the vertebra below and rest in the intervertebral notch. If this occurs on one side only, the body of the dislocated vertebra is advanced forward about one-fourth of its antero-posterior diameter. If both processes ride forward into the notches, the body is dislocated forward a distance equal to about one-half of its antero-posterior diameter. In the unilateral dislocation the cord is not compressed; in the bilateral dislocation there is pressure upon the cord.

Besides these most frequent forward dislocations, there are also unilateral and bilateral backward dislocations, and unilateral dislocations in opposite directions or by torsion. The dislocation is usually complicated by other injuries. If fracture is not present, there is rupture of ligaments. Hemorrhage from torn intervertebral veins or other vessels always takes place. Hemorrhage into the cord is not an uncommon complication. Paralysis due to hemorrhage must be differentiated from that due to bone pressure. More or less injury to the nerve trunks is present. Diagnosis can be made positively only by the help of the *x-ray*. Reduction should be attempted by traction upon the head. If the nature of the lesion is. In my own experiences, may be employed to cause the dislocated articular process to ride back into place.

The prognosis in dislocations between the atlas and axis is bad. Dislocations of the lower cervical vertebrae are more common, and the prognosis is less grave. The mortality is less in the unilateral than in the bilateral form.

We have encountered cases in which the lesion present seemed to be dislocation, but we can never know unless the vertebrae are exposed by operation or autopsy, or are shown by the *x-ray*, just what the nature of the lesion is. In my own experiences, the autopsy has shown dislocation when fracture

¹ Dr. de Forest has presented the results of his studies before a number of societies, but he has not yet published them.

² Blasius: "Die traumatische Wirbelverrenkungen," *Vierteljahrsschrift für prak. Heilkunde*, 1869, Vol. CII, CIII.

was diagnosed and fracture when dislocation was diagnosed, and in a certain number of cases the nature of the bony lesion was not judged. Generally speaking, the dislocations are produced by muscular action or by extreme torsion, flexion or extension of the head. The fractures are produced usually by impactions of the trunk upon the cervical vertebrae and the skull. Figure 1 shows a bilateral forward dislocation of the sixth cervical vertebra.

The following case is of importance because the diagnosis was made by the *x*-ray, the dislocation still exists, and the patient is doing heavy work and enjoying good health.

L. U., German Hospital, 12,545. Male, age 30. The patient was brought into my service with the history of having fallen backwards into an area-way, while sitting upon a railing, a distance of about six feet, and striking upon the back of his head, the trunk being flexed upon the head. Upon admission there was pain and rigidity of the neck and tenderness over the whole cervical region. No displacement could be discovered by palpation either posteriorly or through the mouth. There was partial anesthesia of both hands, partial paralysis of all of the fingers and paralysis of the bladder. The reflexes were increased in both upper and lower extremities, particularly on the left side. A more careful examination of the nerve conditions by Dr. W. Browning showed the above conditions, and all the reflexes of the arm and forearm exaggerated. Sensation absent on back of hand. Knee-jerk active, ankle clonus active. All large muscles of the extremities tender. Babinski reflex present on both sides. It seemed to Dr. Browning that besides an injury to the cervical vertebrae there was also a fusiform hemorrhage in the gray matter of the cord extending well down into the cervical enlargement.

An *x*-ray picture showed anterior dislocation of the fifth cervical vertebra upon the sixth, the body being dislocated a distance equal to about one-fourth of its antero-posterior diameter. (Figure 2). This condition could not be discovered by palpation. Strong longitudinal extension was made, but the dislocation was not perceptibly influenced. While extension was continued, a plaster splint was applied, encasing the head, neck and upper thorax and making pressure upon the chin and occiput and shoulders. There was a gradual improvement in the paralytic symptoms. Catheterization was not required after the seventeenth day. Sensation and motion in the hands returned. The plaster splint

was removed at the end of five weeks and the patient allowed up and about on the sixth week.

X-ray plates made seven weeks after the injury showed the dislocation present. The patient left the hospital and went to work. At the end of four months there was practically no limitation in the motions of the neck. The head seemed pitched forward slightly more than normal. There was some tingling in the fingers of the right hand which was muscularly strong. The grip of the left hand was not so strong; and there was inability to extend completely the two last fingers. There was some feeling of stiffness of the quadriceps extensors. There was also a girdle sensation about the waist, present in the evening and absent in the morning.



Fig. 1. Bilateral Forward Dislocation of Sixth Cervical Vertebra. From Specimen in Guys Hospital Museum. International Text-Book of Surgery.

One year after the injury, January 27, 1909, examination shows the following conditions: The patient is strong and feels well, and does heavy work. The head and neck are freely movable. No pain. The two last fingers of the left hand cannot be extended completely nor tightly flexed. They are the seat of prickling sensations. Otherwise the hands are normal. The sphincter of the bladder is not strong. If the bladder is not emptied immediately, when there is a desire to urinate, dribbling takes place. The girdle sensation has disappeared, but in its place is the sensation of a lump or a drawing together sensation in the umbilical region. The patient feels well and looks well. There is some

pain in the region of the sixth cervical vertebra when the weather changes and becomes cold and damp. The patient, who was previously sexually vigorous, has been sexually impotent since the accident. An x-ray plate, made by Dr. Charles Eastmond, shows the dislocation practically unchanged. (Figure 3).

I have been much interested in studying the x-ray plates of this case, and comparing them with disarticulated cervical vertebrae. As a result of these comparisons, it is evident that the dislocation is unilateral, for in the bilateral dislocation the body must be moved forward a distance equal to about



Fig. 2. Unilateral Forward Dislocation of Fifth Cervical Vertebra. Observe left articular process dislocated forward into intervertebral notch. The superior articular process of the sixth vertebra is seen posterior to the articular process of the fifth at A. The arrow indicates the dislocation of the body.

one-half of its antero-posterior diameter, as is shown in Figure 1. This is absolutely pathognomonic, if the lesion is a dislocation and not a fracture. If the dislocation is unilateral, then the degree of displacement is as is shown in Figure 2 and Figure 3. These two figures show the two sides of the neck. Figure 2 shows the dislocated articular process, that of the fifth lying in front of that of the sixth. Figure 3 shows the articular processes lying in normal relation, that of the fifth behind that of the sixth. Figure 2 is taken with the patient's left side nearest the plate; Figure 3, with the right side. An antero-posterior picture shows the spine of the fifth vertebra deviated to the left. Thus it is evident that the left articular process of the fifth vertebra has ridden over in front of the process of the sixth, and rests in the left intervertebral notch.

The only persistent and unchanging symptom has been the inability to completely extend the last two fingers of the left hand. This I believe to be due to injury to the sixth cervical nerve caused by the articular process of the fifth vertebra falling into

the intervertebral notch occupied by this nerve. It will be recalled that these two fingers are extended by the extensor communis digitorum and the extensor minimi digiti muscles, which are supplied by the posterior cord of the musculo-spiral nerve, which is composed of cords from the sixth and seventh cervical.

It has been possible in cases of unilateral dislocation of cervical vertebrae, to unlock the processes by strong lateral flexion towards the opposite side, combined with traction and appropriate pressure. In such a case, associated with hemorrhage into the cord which is already producing symptoms in the

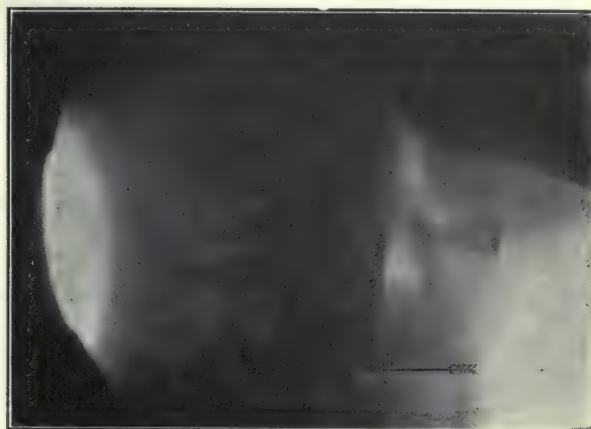


Fig. 3. Unilateral Forward Dislocation of Fifth Cervical Vertebra One Year After Injury. The superior articular process of the sixth vertebra of the right side is seen anterior to the articular process of the fifth in normal relation at B. The arrow indicates the dislocation of the body.

lower extremities and visceral paralysis, I should advise against manipulation of the neck further than longitudinal extension, if the symptoms of bony pressure are but slight and involve only the upper extremities. But if there is no evidence of hemorrhage every effort should be made to reduce the dislocation.

385 WASHINGTON AVENUE.

PERITONITIS DUE TO APPENDICITIS.

It is true the exudation of serum and leucocytes on the part of the peritoneum is, as everywhere in the body, a salutary process which has for its object the warfare against the inroads of the bacteria. But, on the other hand, an extension of the purulent serum implies also the spreading of the poisonous material, and experience shows that in diffuse suppurative peritonitis the struggle, as a rule, terminates in favor of the bacteria, as the disease almost invariably ends fatally without surgical treatment.—FRANZ TOREK in *The New York Medical Journal*.

A PLASTIC MASTOID OPERATION; A NEW OPERATION FOR ACUTE MASTOIDITIS.*

FRANK TUCKER HOPKINS, M.D.,

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Although the technic of the mastoid operation for acute mastoiditis is generally well understood and satisfactorily carried out, we have as yet accomplished little in shortening the length of time required for the after-treatment, which remains still a labor of many weeks' duration. In recent years, however, two methods have been proposed with this end in view.

1. The Blood Clot Method, and,
2. The so-called Modified Blood Clot Method.¹

In the blood clot method the posterior wound (the skin incision) is closed absolutely, and the bone cavity is supposed to fill up with a blood clot which is later to become organized. In the modified method there is no blood clot at all. The wound is sutured throughout with the exception of a small opening at its most dependent portion, through which the drainage of the cavity is secured. The granulations are left to take care of themselves, and the drain is removed when the granulations have sufficiently filled the cavity to make the introduction of the drain difficult.

While in some cases both of these methods have given brilliant results, yet in other cases very serious accidents have followed, due to the loose piling up of granulations and the burrowing of pus through easily formed fistulous tracts. The surgeon has no control of the granulating process, and no knowledge of the burrowing of pus, until some abscess, more or less deeply placed, produces unfortunate results.

In this connection we may mention Plummer's² method, which, with the modified blood clot as a basis, endeavors to fill up the greater part of the bony cavity by bodily pushing back the posterior wall of the membranous canal (having lowered the bony wall to do this) and holding this membranous wall in approximation to the bony surface by firmly packing the canal. The posterior wound is then partially sutured and drained. Here the same objection obtains as in the former method,—that of an uncontrolled granulating process in a closed cavity.

In 1877, Wolf³ suggested making an opening for drainage through the posterior canal wall, after

removing the bony wall to do this, and then closing the initial incision throughout except at its lower angle, which was to be left open, thus affording opportunity for thorough irrigation of the bone cavity. I do not know whether the later methods were based on Wolf's suggestion or not, but his method did not, at that time, meet with much favor; and for acute mastoiditis no essential change in after-treatment was made until the blood clot mentioned was proposed.

The method I am about to describe, and which I have called a plastic mastoid operation, consists, in a word, of first, making a meatal opening through the concha and posterior canal wall; secondly, the complete closure of the posterior, or initial incision; and, finally, the cicatrization of the excavated mastoid surface; in other words, the application to *acute* cases of the plastic methods now used only in radical operations.

In the details of the operation my method follows along the lines of the Heath operation for *chronic* purulent otitis media, which Heath proposed in 1906, and which with more elaborate technic was described by Ballenger in 1908, but which has not been used by either of these surgeons for cases of *acute* mastoiditis. My method is simple and free from danger, and the time required for post-operative treatment is much shorter than by the present method of filling the bone cavity with granulations.

In the method I suppose, the usual mastoid operation is done, and with the same care and attention to detail. When in all other respects the mastoid operation is complete, the outer portion of the posterior bony wall of the canal is cut away about to the level of the floor of the canal so that it shall offer no hindrance to free drainage. This removal extends as far inward as the outer wall of the antrum, but the outer wall of the antrum, unless necrotic, should be left intact. An opening is then made in the concha and posterior fibro-cartilaginous wall of the meatus, exactly as is done in the radical operation; but in doing this the precaution must be observed that no traction be made on the membranous canal which shall disturb the position of the membrana tympani. The style of the incision—the shape of the meatal flap—is unimportant; either a Ballance incision, curved and tongue-shaped, or a Panse incision, T-shaped, and giving two quadrilateral flaps, may be chosen; the object being to furnish a window of sufficient size to give drainage and make the excavated mastoid surface accessible, through the meatus. The carti-

* Read before the Section on Otology of the N. Y. Academy of Medicine, January 8, 1909.

lage included in the flaps must be dissected out, the flaps turned back to line the mastoid cavity,—the raw surface against the raw posterior surface of this canal wall,—and should be secured in this position by catgut sutures. These sutures must be passed through the periosteum or through an aponeurosis of muscle, but not through muscle tissue, else they will be apt to pull out and permit the flap to sag, which will eventually leave the opening inconveniently small. When the flaps have been secured the cavity is packed with a strip of iodoform gauze, and the end of the gauze brought out through the meatus. The posterior wound is sutured throughout with silkworm-gut, and the usual dressings applied. At the end of five days the dressings are removed, the stitches of the initial incision are taken out, and this wound should be found healed throughout by first intention. The packing is carefully removed through the meatal opening, and the cavity, after cleansing by irrigation and by swabbing, is again somewhat lightly packed. For a day or two longer a light protective dressing may be applied behind the ear.

In considering this mastoid excavation and the healing of it, we must disabuse our minds of any idea of a cavity to be filled up with granulations. Such is not the case. Rather, it is a surface which, having granulated, is to be covered with cicatricial tissue, and so must be treated as the similar surface of the radical operation,—though it may be a little more extensive in its area, since it dips downward into the region previously occupied by the mastoid tip.

The subsequent treatment consists of applications through the meatus, which should be made daily. If granulations are exuberant, the curette or silver bead is applied. When cicatrization has begun there should be no packing, and usually swabbing is better than syringing. Most important is the careful attention to exuberant granulations, especially in the posterior-inferior angle where they often escape notice and become very troublesome. Cicatrization will soon be found spreading up over the antrum and along the vault of the cavity. The whole surface may be expected to be dry in five or six weeks.

To lessen even this short period of the time required for healing we may have recourse to skin grafting. At the end of two weeks a firm and satisfactory granulating surface will give opportunity for a graft to take. This may be applied through the meatus, and, if successful, it will materially shorten the time of cicatrization; or the posterior wound may be reopened, a Thiersch graft inserted,

and the wound sutured again, as in secondary grafting in radical cases.

In case the skin is inflamed at the time of the primary operation, the suturing may be postponed a few days, in the meantime packing the wound. The same method holds good if it has been necessary to open the sinus.

The advantages which I claim for this method are its simplicity, its ease of handling, its better appearance, its rapid healing with perfect safety, and the better hearing which results.

Although the operation itself is more troublesome and requires a little longer time than the usual operation, the after-treatment is easier and more quickly conducted each day, and less painful to the patient.

Again, it avoids the disfigurement of a wide scar behind the ear, or the equally unpleasant post-aural depression, occasionally seen.

My method gives more rapid healing. It is rare that an ordinary mastoid wound is fully healed under eight weeks, while here we may obtain healing in from five to six weeks. And aside from the great advantage of the more rapid healing of the whole wound, is the great importance of the prompt healing of the *post-aural incision*, for with this method *the bandage may be entirely discarded in ten days*. In general, also, by this method the hearing is better than by our present method of operation because the canal is not narrowed, as is now often the case, by a partial prolapse of the posterior wall, but on the contrary, it is widened, leaving a free canal.

As I have thus far done this operation in only five cases, my paper is offered as a preliminary report on a new operative procedure; but since these cases include very severe mastoid conditions, in which my results have been exceedingly satisfactory, I have felt justified in offering for consideration this description of the operation, and a brief résumé of my cases.

CASE I. H. W. The first case on which I performed this operation was that of a simple mastoiditis with mixed infection, in a man twenty-four years of age. There was in this case an exostosis of the posterior canal wall which made it necessary to open the membranous canal. The dressing of this case was difficult on account of a congenital subluxation of the inferior maxilla, which distorted the canal. The ear was dry in nine weeks, however, while the posterior wound was completely healed under the first dressing.

CASE II. M. H., a man thirty-one years of age. The discharge had been present three weeks. The smear showed a streptococcus capsulatus infection. In operating it was necessary to expose the sinus

over a large area. Under the first dressing the posterior wound healed throughout, with the exception of half an inch at the lower angle, which healed under the second dressing. The rest of the wound was dry in eight weeks.

CASE III. N. L., a woman thirty-five years of age with a four days' history of discharge, which showed a streptococcus infection. The operation exposed the sinus over a large area including the knee. The zygomatic cells were also involved. The posterior wound healed under the first dressing. The wound was dry in a little less than eight weeks.

CASE IV. P. D., a woman, forty-seven years of age. The discharge had been present nineteen days and showed a pneumococcus infection. The case was a very severe one. On admission there was a large subperiosteal abscess. The canal was so much narrowed by swelling that the membrana tympani could not be seen. The mastoid destruction was very extensive and involved also the zygomatic cells. There was also a large epidural abscess in the middle fossa, and a perisinus abscess; and both of these exposures were covered with thick velvety granulations. Here, on account of the superficial inflammation caused by the subperiosteal abscess, the incision behind the ear did not heal by first intention through its lower half, but was closed by a second suturing at the end of a week, and healed promptly. In this case at the end of two weeks, I inserted a small skin graft through the meatal opening. Part of this graft took, and helped to make the cicatrization more rapid. The cavity healed in five weeks and two days.

CASE V. The last case is still under treatment and so I cannot give any definite report on it at this time.

All my cases have been operated upon at the New York Eye and Ear Infirmary, and all were ward cases.

¹ REIK, *Journal of the American Medical Association*, March 31, 1906.

SPRAGUE, *Laryngoscope*, September, 1906.

BRYANT, *Annals of Rhinology and Laryngology*, September, 1906.

² PLUMMER, *Journal of the American Medical Association*, November 24, 1906.

³ WOLF, *Berliner Klinische Wochenschrift*, 1877, p. 205.

HEATH, *Lancet*, August 11, 1906.

BALLENGER, *Journal of the American Medical Association*, September 26, 1908.

DEEP TENDERNESS IN HERNIA

Extreme sensitiveness, either in the tumor or surrounding parts, during the manipulation of a hernia, should always cause the surgeon to suspect that there is some condition present other than hernia. Uncomplicated hernia is rarely extremely sensitive, and while the wearing of a strong truss may produce painful surface irritation, it should not cause deep-seated pain unless there is some other pathologic condition.—W. B. DE GARMO in *The Post-Graduate*.

A MODIFIED OPERATION FOR INGUINAL HERNIA.*

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An apology is perhaps expected from any one who would venture to suggest a new operation for the repair of inguinal hernia when the many already at our command seem to meet all the essential requirements. But the offense is perhaps mitigated when it is proposed to deviate from the usual procedures only in one particular step, with the single object in view of simplifying the operation as a whole. Any suggestion in technic which obviates undue manipulation of tissues has much to commend it and should be accepted, provided the basic principles of the operation are complied with and adhered to. The success of any operation for hernia depends, in no small measure, among other things, upon the least possible trauma to tissues and structures, which result is not always incident to the usual methods of ablation of the sac. The prevailing technic of isolation of the sac and the transplantation of the cord has no good anatomical, physiological, surgical, or mechanical advantage, and should therefore be characterized as an unnecessary refinement. Upon this basis the proposition advocated in this paper is suggested and advanced as entirely compatible with safety and efficiency, combining, as it does, all the essential requirements and principles.

The feature of the operation now under discussion lies in the treatment of the hernial sac which is permitted to remain in its bed practically undisturbed. In other details, it follows the procedures usually employed and generally accepted.

The principles which underlie the rationale of the operation and form the basis of the technic may now be briefly considered. In the normal descent of the testicle, a diverticulum of peritoneum, the processus vaginalis, precedes it clothed with its mesorchium, to its final resting place in the scrotum. At a certain stage, therefore, there is a communication between the processus vaginalis and the abdominal peritoneum. Later this communication is lost by an obliteration of the upper part of the diverticulum, so that the testicle lies in its scrotal bed covered by a serous layer derived from the abdominal peritoneum, but having no connection with it. A similar process of obliteration and blending of the peritoneum is observed in the peri-

* Read before the Alumni Society of Bellevue Hospital, January 6, 1909.

toneal development of the pancreas. When first developed this viscus possesses a complete peritoneal covering, lying between the two layers of the posterior mesogastrium. At this stage, then, the stomach has changed its position by rotation, carrying the pancreas with it, the now posterior covering of the head of the pancreas lies in contact with the serous covering of the right kidney and soon becomes obliterated by absorption. In like manner the stomach by its further adaptation to the cavity of the abdomen carries the tail of the pancreas to the left, causing its posterior layer of peritoneum to lie in contact with the left kidney and its peritoneal covering. The same process of

and that the peritoneum as such has lost its identity. Matas in his article on the "Radical Cure of Aneurism" (*Annals of Surgery*, February, 1903) regards the aneurismal sac as a large diverticulum or prolongation of the parent artery with which it is connected. Quoting further from his paper, he observes that "the lining membrane of the sac is a continuation or expansion of the endothelial intima which lines the interior of the artery, and in fact of the entire vascular system, and that the sac itself, when not disturbed from its vascular connections, is capable of exhibiting all the reparative and regenerative reactions which characterize the endothelial surfaces in general when subjected to irritation." The analogy between the aneurismal sac and the hernial sac is apparent. And it is also

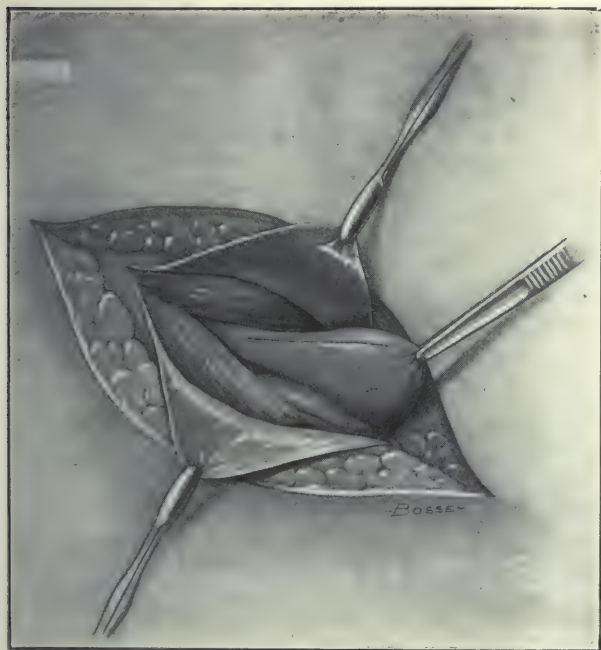


Figure 1.—Skin of Superficial Fascia and External Oblique Have Been Incised, Showing Bulging Hernial Sac. Incision Through Sac is Indicated.

obliteration takes place and the pancreas now lies wholly in the retro-peritoneal space. A further review of other viscera as regards the development of their peritoneal relations need not at this time be considered, since the formative processes exhibited by the pancreas serve sufficiently to illustrate the fact that contiguous layers of peritoneum brought into contact adhere, blend and obliterate. That the adult peritoneum is capable of such blending and obliteration is well illustrated in intestinal anastomosis in plication of the gastro-hepatic omentum and stomach, and in all conditions where peritoneal suture is employed. Whatever be the methods of securing peritoneal apposition, or whatever be the conditions for its employment, the histological findings reveal that the resulting union is continuous

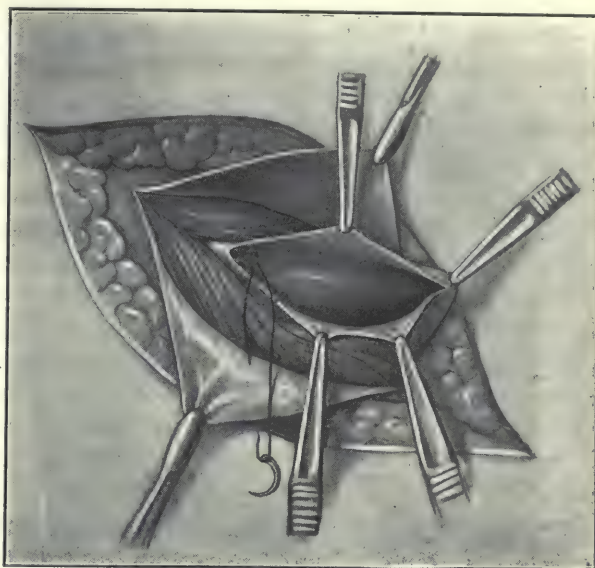


Figure 2.—The Purse String Suture Has Been Placed Well Within the Lumen of the Sac. Traction on the Sac Will Insure the Placing of the Suture Sufficiently High to Avoid Any Pouching at the Site of the Internal Ring.

clearly evident that the hernial sac is a prolongation of the abdominal peritoneum and as such will exhibit all the tendencies to occlusion and obliteration, when carefully approximated by suture. And, further, it may be added that whatever be the gross change in the hernial sac, its peculiar identity remains, and its interior when subjected to pressure and irritation is still capable of a reaction as described above.

These brief preliminary remarks serve to introduce the details of the operation, which are as follows:

The skin and superficial fascia are incised, exposing the bulging sac and its intimate coverings. The sac is further exposed by incising the external oblique aponeurosis, in a direction parallel to its fibres. The sac is now revealed (Figure 1) and in

accordance with the proposed modification, its relations to other structures of the canal are left undisturbed and no dissection whatever is attempted. An incision is made in the longitudinal axis of the sac (Figure 1) its contents thus being exposed, are inspected and returned to the abdominal cavity. The interior of the sac is now rubbed with a gauze sponge or scarified with the point of a needle, so as to more readily favor the cohesion of its subsequently opposed peritoneal surfaces. The next step is the closure of the sac at the internal ring. With a well curved needle carrying plain catgut No. 2, a purse string suture is placed well within the lumen of the sac, as illustrated in Figure 2. A little traction on the sac will insure the placing of the suture sufficiently high and will thus avoid any outward bulging of the peritoneum at this situation. The suture penetrates only the peritoneum, and the needle is guided in the avoidance of other structures of the canal and cord by the same principles which obtain in peritoneal technic in general. The inclusion of any part of the cord, therefore, in this or in the following step of the operation is a remote contingency. The portion of the sac distal to the purse string suture is now obliterated by a continuous suture as depicted in the diagrammatic line drawing (Figure 3). The final step in the obliteration of the sac is the placing of a running suture which approximates the sac and its intimate coverings at the site of the incision which revealed its interior. After disposal of the sac as described, the formation of a new anterior wall is effected in the usual manner, by suture, with interrupted kangaroo tendon, of the internal oblique and conjoined tendon to the sharp shelving border of Poupart's ligament. The cord and its structures, however, are permitted to repose beneath this new anterior wall, and necessarily so, since there has been no dissection of these structures. This burying of the cord is similar to the method advanced by Ferguson and now generally adopted as an advance over the former procedure of transplantation as in the Bassini operation. In the final steps the aponeurosis of the external oblique is sutured with plain catgut No. 2, and the skin with fine gut or silk. A résumé of the foregoing shows but a single deviation (suture obliteration of the sac) from the steps of the usual operations, which in their sac dissection necessarily inflict varying degrees of trauma on the sac itself, the cord and testicle, and make uncertain the integrity of the nerve supply. In the author's modification it is to be noted that the cord or testicle are, at no time during the operation, disturbed or manipulated.

The essential principles underlying the operation for inguinal hernia may be embodied under two heads; closure of the sac at the internal ring, and the formation of a new anterior wall for the inguinal canal. In other words, the aim of the operation is to restore the rotundity of the peritoneum and to construct a barrier which shall act as a restraining wall against the protrusion of any viscus through the internal ring. All operations have these points in common and they differ only in the way in which they are effected. A consideration of the second of these aims is foreign to our present discussion and deserves no criticism. A choice of operation then depends upon which

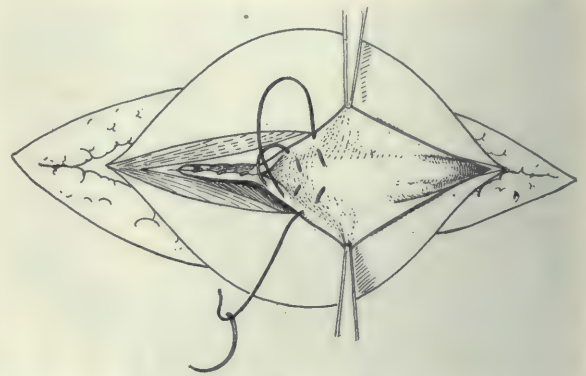


Figure 3.—Schematic Line Drawing Showing Obliteration of the Sac With Continuous Suture. In the Illustration the Sac Has Been Much Elongated in Order to Show the Method of Suture Better. Five to Eight Sutures Will Ordinarily Suffice to Effect Closure.

method appeals as being least involved and easiest of accomplishment. The prevailing technic of effecting the first of these steps the writer considers superfluous at the cost of inviting unfavorable complications, both immediate and remote. And even in the absence of complications, this detail we consider without manifest advantage. That the same closure at the internal ring may be attained by a simpler technic consuming less time is very apparent in view of our previous observation, that when endothelial surfaces have been approximated and have been subjected to irritation and constant pressure, the inevitable result is one of obliteration, based on the embryological and histological data considered in our introductory remarks.

Even though the author's claim of a time-saving factor should not enter in the consideration of this modification, the advantage would still be in favor of suture obliteration, if for no other reason than that, which is inherent in a non manipulation of the cord and other structures at the canal. Moreover, I am certain that suture obliteration may be accomplished in considerably less time than is required

for isolation and resection. This fact has been repeatedly shown but it is scarcely justifiable to suggest this element as the prime argument in favor of this newer procedure. In the smaller herniae the modification cannot serve to an advantage as far as the time element is concerned, since isolation in these cases has always been a most easy and rapidly performed step. In the smaller herniae, then, we may discuss a consideration of the rapidity and emphasize the other advantages. In the larger herniae with thick and densely adherent walls, however, rapidity does not enter as a striking factor, and it is in these cases that all the advantages claimed for the modification obtain in full significance.

The possible criticism which is likely to arise in

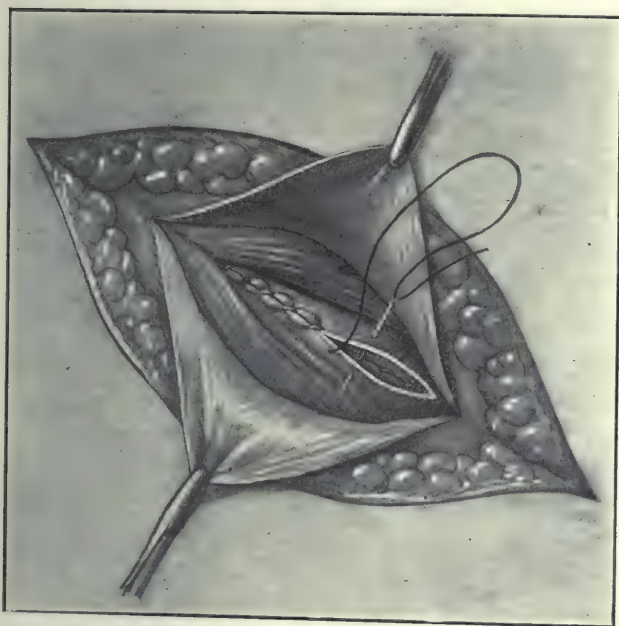


Figure 4.—Shows the Continuous Suture in the Final Step of Complete Obliteration. Figure 5 Shows the Same Suture but in a More Diagrammatic Way. The Sac is Seen to Blend With Its Adjacent Structures and Its Margins Therefore Have Not Been Outlined as in the Following Schematic Illustration.

connection with suture obliteration of the sac has not been left unconsidered in my clinical observations. A natural doubt arose in my earlier cases as to the behavior of the remnant of the sac so left. It is sufficient to say that no pathological condition of the distal portion of the hernial sac has been observed, or has occurred, which fact is in harmony with the principles already set forth. The formation of a cyst or hydrocele is most remote and quite impossible if the inner surfaces of the sac have been accurately and carefully approximated. Aside from the pressure and irritation applied from within the sac we must concede the presence of a posi-

tive pressure effected by the overlying structures, as a significant factor in the process of effacement. In the McEwen operation, the sac, though isolated, is not cut away, but is applied as a pad at the site of the internal ring. Even though deprived of its vascular supply, autopsy report shows this pad of peritoneum completely absorbed. (*Von Bergman's System of Surgery.*)

In conclusion we would submit that the dissection of the sac has no anatomical or surgical advantage, and should therefore not be insisted upon as an essential requirement in the details of the operation. If the continuity of the peritoneum at the site of the internal ring has been restored, and the portion of the sac distal to this, obliterated, the first

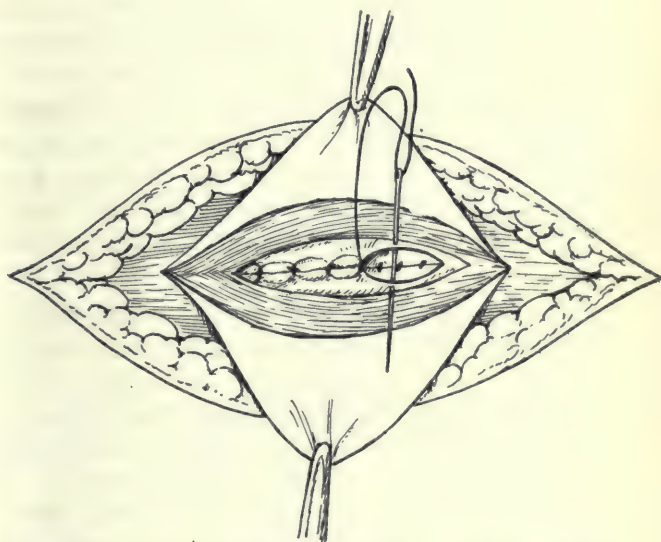


Figure 5.—Schematic Drawing Showing Final Suture as in Figure 4 But More Diagrammatic. This Suture, as will be Noted, Approximates That Portion of the Sac Which Has Not Been Included and Opposed by the First Suture. This Suture May be Omitted if the First Has Been Introduced Sufficiently Near the Edge of the Sac Wall to Insure an Apposition of Its Entire Endo-thelial Surface.

principle in the radical cure of hernia has been attained.

It is only fair to say that the uniformly good results which have attended the cases up to the present have been an encouragement to further trial, with the firm conviction that subsequent experience will fully justify our present attitude. An experience with some twenty odd cases without a single untoward circumstance, I believe, warrants this preliminary presentation.

The advantages of this simplified technic may be summarized under the following heads:

1. Rapidity of performance.
2. Diminished period of narcosis.
3. No dissection of sac, and tissue bruising therefore eliminated.

4. Preservation of nerve distribution.
5. Absence of the sometime troublesome venous hemorrhage.
6. No manipulation of the cord, its vessels or the testicle.

We may further epitomize the above headings in the one word *simplicity*, which in the broadest sense, combined with efficiency, implies ideal surgical technic.

104 EAST 31ST STREET.

SURGERY OF THE PERICARDIUM AND HEART.*

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The heart, situated within the chest in such close relation to the lungs and being such an important organ in the continuance of life, has until very recently been neglected by the surgeon as a possible object of operative attack in conditions of disease and injury.

Suture of the heart for the relief of penetrating wounds was first suggested in a paper read before the old Anatomical and Surgical Society of this city, in 1881, by Dr. John B. Roberts, of Philadelphia, and it was not until fifteen years later that the first operation of this kind was reported.

As early as the sixteenth century Hollcrius made the assertion that wounds of the heart were not necessarily fatal, and since then it has been shown a number of times that persons receiving heart injuries while in combat have followed up their adventures for some little time before succumbing.

It was Morgagni who first recognized that compression of the heart by the accumulation of blood in the pericardium was the cause of death in many cases.

Fisher in 1867 from a study of 452 cardiac wounds established the fact that an individual might exist for hours or even days with a wounded heart and that in from 7 to 10 per cent. of the cases the wound heals and the patient actually recovers. Kiawoff gives practically the same figures.

Billroth as late as 1883 declared that no surgeon who wished to preserve the respect of his colleagues would even attempt to suture a wound of the heart.

Tillman's text-book of surgery (1897) gives the following treatment of injuries of the heart:

"The treatment of injuries of the pericardium and the heart is, generally speaking, symptomatic; but since the adoption of antiseptic methods in surgery, a more active treatment is properly made use of. Here also probing should be avoided as far as possible. If the internal mammary or the intercostal arteries are injured, hemorrhage from these is arrested by ligation. We are powerless against severe hemorrhage from the heart. Unfortunately, cardiac wounds cannot be closed by suture. Any foreign bodies that may be present are, if possible, removed. The external wound, and, if necessary, that of the pericardium also, is disinfected according to general rules, drained if necessary, and covered with an antiseptic protective dressing. This is changed upon the appearance of fever, dyspnea or pain. Absolute quiet is of the greatest importance for the patient, and hypodermatic injections of morphin can scarcely be dispensed with. The diet should be light and not exciting. Wine or whiskey must be strictly forbidden. In case of collapse, stimulants, particularly camphor and ether, injected hypodermatically, are indicated. Venesection was formerly recommended very generally for cardiac wounds in order to diminish the action of the heart and to restrict the hemorrhage. Reidinger also is of the opinion that blood-letting ought not to be abandoned entirely in these cases. As a matter of fact, hemorrhage from the wound in the heart has been very much diminished or wholly arrested by venesection.

When blood has collected in the pericardium (hemopericardium), causing cyanosis or cardiac weakness, puncture or incision of the pericardium is to be recommended, likewise when there is marked serous or suppurative effusion in the same. In these cases a trial puncture with an aspirating needle should first be made, and if this reveals the presence of pus the incision is to be made in the middle of the area of heart dulness, usually in the fourth intercostal space. After the incision of the pericardium in case of suppurative pericarditis, the same should be drained. If the trial puncture reveals blood or serum—that is, hemopericardium or serous effusion—the contents of the pericardium should be evacuated by puncture. This has been especially recommended by Rose in case of hemopericardium with compression of the heart. But in very large effusions of blood, incision might often prove more effective than puncture."

In contrast with these statements is that of Hill, of Montgomery. In the most recent paper published on this subject, Hill says "The surgeon not only would be justified but it is his bounden duty to

* Read before the Kings County Medical Society, October 20, 1908.

operate upon every one of these cases, for it is more important, if possible, to rescue a drowning heart than to relieve a strangulated hernia."

In 1894 Kronecker pointed out the fact that the heart could be punctured with but little interference with its action, except when a spot (Kronecker's co-ordination center) in the interventricular septum was touched, when immediate death ensued. The interesting conclusions drawn by Elsberg¹ from experimental investigations are as follows:

"That the heart could be grasped with the hands or forceps and gently compressed, with no appreciable difference in its action, and that it could be penetrated by a needle and knife, producing only a temporary irregularity of its action; that penetrating wounds produced during systole bled more than those produced during diastole, and that wounds of the ventricles produced during systole were larger than those produced during diastole; that oblique wounds bled less than perpendicular wounds; that wounds of the right ventricle were more dangerous than those of the left because the wall of the right ventricle was thinner, and also because the blood in the right side of the heart coagulated more slowly; that wounds of the heart heal kindly and that the cicatrix is usually complete in about fourteen days; that interrupted sutures are better than continuous ones; that the tissue included in the suture always atrophied, and was replaced by scar; a smaller number of muscular fibers was included in the interrupted than in the continuous suture, thus producing less atrophy and less scar tissue; that superficial sutures were less likely to tear out than deep ones, and that the sutures should be inserted and tied during diastole because of the danger of their tearing out if tied during systole."

The first successful cardiorrhaphy was published by Rehn in 1897. In 1907, Rehn² collected 124 cases of suture of the heart for wounds with 49 recoveries (40 per cent). Of this number 9 were performed in the United States, with 5 recoveries. It is probable that this table does not include all cases operated, as many unsuccessful cases are likely not reported.

Dr. Francis T. Stewart¹ of Philadelphia, in May, 1904, in connection with a case of his own presented a table showing a record of sixty cases operated for stab wounds. Of this number twenty-three recovered and thirty-seven died. Of the deaths, sixteen occurred within twenty-four hours from shock and hemorrhage, three died on the second day, four on the third day, two on the fourth

day, three on the fifth day, and one each on the sixth, fourteenth, nineteenth and twenty-second days; in five the time of death is not stated. Of the cases dying after the second day, nearly all were due to sepsis. In most of the cases the pleura was also injured and became infected. Even in the cases of recovery many were complicated by an empyema. As it is fair to presume that the object making the wound is rendered sterile by passing through the more superficial tissues before reaching the heart, the probable cause of so large a proportion of infected cases is to be found in the necessarily hurried preparation of the field of operation.

Meerwein³ states that in the one hundred and twenty cases of operative treatment of heart injuries recorded, mention is made of only one case of injury of an auricle. He reports a second case, and states that it is the first in which a stab wound of the auricle was treated by ligation. The lower part of the left auricle, including the wound, was drawn out and tied around with a stout thread. This was done sixteen hours after the injury, and was followed by rapid recovery.

Sauerbruch⁴ operating with his air cabinet relates his experiences in experimental surgery of the heart and states that temporary occlusion of the afferent veins is practicable, and much reduces the danger and difficulty of the work, especially when suturing the right heart after a stab wound.

Haecker⁴ by experiments on dogs showed it to be possible to operate on the almost empty heart by compressing the afferent vessels, and that extensive incisions could be made in the different cavities of the heart without permanent injury to the organ. This fact, he thinks, opens fine prospects for surgical intervention on the heart, especially for foreign bodies. His work was done mostly in the Sauerbruch air cabinet, which allowed the chest to be opened up without fear of pneumothorax, the lung continuing its functions undisturbed, while reducing the tendency to hemorrhage when the incision was made, and the danger of infecting the pleural cavity. In suturing the organ it should be held in such a way that the fingers can compress the afferent veins. By displacing the heart forward the vessels are kinked and this arrests the blood supply. He recommends a button suture with medium-sized catgut or silk, taking in only the myocardium and epicardium. The ends of the thread in the first suture are left long and help to hold the organ. The superior and inferior vena cava could be clamped for ten minutes, in the experiments on

dogs, without serious results to the animal. By clamping these veins and the left coronary vein, brief operations could be done with the heart empty without serious consequences. This allows the different cavities of the heart to be opened up and thoroughly searched for a foreign body, and even large parts resected. No air embolism was noted, probably from the under pressure prevailing in the cabinet. Small foreign bodies were constantly swept along with the blood current, but needles lodged in the cavities of the heart. His experience seems to indicate that there is a certain point in the walls of the heart near the mitral orifice, injury of which is followed by immediate arrest of the heart action.

The statistics of Rehn giving all cases up to the middle of 1907, give one hundred and twenty-four cases with 40 per cent. recoveries. In seven hundred and twenty-nine cases collected by Fischer in which no operation was done, less than 16 per cent. of the patients survived.

Franke⁶ after reviewing the published reports says, "they all tend to prove that the great danger in case of injury of the heart is from pressure on the organ from the blood accumulating in the pericardium. This pressure is the main source of the disturbances in the functioning of the heart—not the injury itself. No matter whether an operation is contemplated or not, the first step is to remove this pressure by puncture and aspiration of the accumulated blood. In most cases, this will render further operative intervention unnecessary, and in all cases should precede it. He urges the general practitioner to puncture when symptoms develop—not waiting for surgical assistance. Even at the best, he adds, more extensive operative treatment is apt to be accompanied by complications leaving a predisposition to organic affections later.

Symptoms.—The symptoms are somewhat dependent on the nature of the wound. If there is external loss of blood or bleeding into the pleura the symptoms will be of an acute anemia. If the bleeding is entirely within the pericardium, the anemia will not be so marked, but the embarrassment of heart, due to compression, will be the marked symptom. When the bleeding is external it may be either continuous or in jets.

The location of the external wound is a factor to be considered. The pulse is weak and irregular and if blood is confined to the pericardium the apex beat may be neither felt nor heard. Frequent attacks of syncope are common—and usually marked dyspnea, due to the loss of blood, and com-

pression of the lung through injury to the pleura (the pleura being injured in 57 of the 60 cases recorded by Stewart). When time permits and diagnosis is uncertain the X-ray will show the presence of blood confined in the pericardium.

The size of the wound in the heart cannot be judged by the size of the superficial wound; in fact a number of cases are recorded where, in stab wounds, the heart injury was much more extensive, apparently being due to the movement of the organ while the blade of the knife was entering it.

There is likely to be both hemo- and pneumothorax as the result of injury to the pleura and lung.

Prognosis—Bochardt⁷ divides the cases as follows:

First.—Those dying immediately, including those cases from severe violence resulting in extensive laceration or rupture of the heart, or profuse bleeding into the pericardium, or injury to Kronecker's co-ordination center.

Second.—Those cases surviving for a time and dying either from the loss of blood, or accumulation of blood in the pericardium—heart tamponades.

Third.—Those cases recovering from the injury and loss of blood, but in whom the cicatrix in the heart wall gives way under exertion. In these cases, healing is not *restitutio ad integrum*, but there is produced a weak cicatrix of connective tissue. If there is no sudden exertion this may lead to an aneurism of the heart.

Izzo reported a case of stab wound of the left ventricle which was discharged cured on the twenty-eighth day; a few hours later the patient died suddenly while lifting a heavy boly. At the autopsy the cicatrix of the left ventricle was found ruptured. Nine such cases are recorded. Of the wounds of the heart about 90 per cent. are penetrating and of these only about 19 per cent. are fatal. Of the seventy-five deaths in the operated cases, sixteen occurred on the operating table or within one hour after the operation, and seventeen from seven hours up to two days, which makes a mortality of 44 per cent. from hemorrhage and collapse. Thirty died as a result of infection, or 84 per cent. of the seventy-five deaths in operated cases were due to hemorrhage and infection (Hill). Forty-nine cases recovered, about 40 per cent. of the cases operated. Statistics show a more frequent injury of the left ventricle than of the right although most authors have placed the right first in the order of frequency. As already stated the auricles are seldom penetrated.

Treatment.—In these cases immediate operative

interference is indicated, for according to Rehn not a single death can be attributed to the operation. One must approach such a case with the knowledge that the conditions are desperate and that death on the operating table has occurred in a large proportion of cases. All authors state that a needle penetrating the heart should be removed at once, but that a knife blade, or similar instrument, should never be withdrawn until the surgeon is fully prepared to deal with the wound in the heart itself. If the condition of the patient will permit, thorough aseptic preparation should be made, for as has already been shown, a large proportion of cases die of sepsis, either of the pericardium or pleura. During the period of preparation mechanical pressure on the heart may be diminished by aspiration of the pericardium. For this it is recommended that the needle be passed through the sixth left interspace close to the sternal margin for one-third inch, then behind the sternum for half an inch, to escape the pleura, and then raising the handle push the needle downwards into the pericardial sac traveling a little more than two inches (Hill). The use of an anesthetic depends on the condition of the patient; if unconscious no anesthetic need be employed, but where the patient is conscious chloroform is generally recommended. The use of the local anesthetics or of morphin combinations would hardly be of use in these cases.

The generally accepted incision is that of Professor Rotter, of Vienna. An incision four inches in length is carried along the lower border of the third rib, commencing three-fifths of an inch from the sternum—then downwards to the lower border of the fifth rib and along this inwards to a point three-fifths of an inch from the sternum. The fourth and fifth ribs are divided and the musculo-osseous flaps turned upward. The incision must not approach nearer the sternum for fear of injury to the internal mammary artery. This incision gives opportunity to inspect both the pericardial and pleura cavities and the heart and to remove any extravasated blood. In all about fifteen methods of incision have been suggested, and are divided into the transpleural and extrapleural. The extrapleural is only of advantage in the small proportion of cases in which the pleura is not opened and has the great disadvantage of a small opening and limited field of operation. Rehn advocates incision of the pleura, when it is not injured, to avoid negative pressure from aspirating air into the mediastinum, causing the blood to foam.

Formestaux and Line⁸ recommended the following incision: "A cutaneous-muscular flap is

formed and thrown outwards; the flap includes the skin and the great pectoral. The advantage of turning the flap outwards is that the external surface of the thorax can be examined, and it can be seen if the wound is a penetrating one or not. The flap is covered with a compress, and the third, fourth and fifth ribs are resected 8 cms. from the sternal border; the ribs are divided with a costotome or a strong chisel. The intercostals, as a rule, do not bleed, and if they do, the hemorrhage is soon stopped. The flap is turned inwards, and the parietal layer of the pleura is turned inwards with it. The only objection is that the pleural cavity is opened, but the operation can be done more quickly this way. Very often the pleural cavity is opened by the same weapon which has wounded the heart, and the authors have never seen any severe symptoms which they could refer to opening of the pleural cavity."

The wound of the lung, when one exists, as a rule, ceases to bleed as soon as the lung collapses.

The opening of the pericardium is enlarged by cutting or tearing in the axis of the heart. On exposing the heart if profuse bleeding is taking place this may usually be checked by placing the finger in the wound until suture can be inserted. A round curved intestinal needle is recommended. Silk has been more generally employed but catgut has also been used in a number of successful cases. The sutures are inserted at intervals of about one-eighth of an inch; they should not penetrate the endocardium, the ends cut rather long to prevent untwisting and should be tied during diastole, if possible, although Stewart claims this is not necessary. The following quotation from Hill fully explains the method of suture:

"With the right hand gently lift the heart out of the pericardium and introduce, from below, the left hand, and immediately we feel the vena cava inferior, and its inosculation into the right atrium, which should be pressed between the index and ring finger, and pushing upwards we displace the inosculation of the vena cava superior. Rehn truthfully remarks "we have in the compression of the right atrium venosum a means of bringing the most violent heart bleeding to a stop at once." In suturing be certain to get a good hold, do not include the endocardium, lest a brittle heart give way. I prefer the interrupted catgut stitch and to use an intestinal needle. Should the heart appear weary, allow it to glide back to its normal position for a few moments. As few stitches as possible should be passed, commensurate with safety against leakage, as they cause a degeneration of the muscular fiber

with its tendency to dilatation and rupture. Giordano, from his experiments upon rabbits, prefers Lembert's sutures in closing an auricular wound. The sutures should be passed and tied during diastole."

Should the heart cease to beat during the manipulations, the sutures should be rapidly passed and then the heart massaged.

Conclusions.—Having no practical experience in these cases I can do no better than quote the conclusions of Hill in his paper published September 19, 1908, in the *Medical Record*.

1.—That any operation which reduces the mortality of a given injury from 90 to 60 per cent. is entitled to a permanent place in surgery, and that every wound of the heart should be operated upon immediately.

2.—Whenever the location of the external wound and the attending symptoms cause suspicion of a wound of the heart, it is the duty of the surgeon to determine the nature of the injury by an explanatory operation.

3.—Unless the patient is unconscious, and corneal reflex abolished, as in Pagenstecher's case, an anesthetic should be given, and preferably chloroform. Struggling is liable to produce a detachment of a clot, and renew the hemorrhage, as occurred in Parlavacchio's patient.

4.—Never probe the wound, as serious injury may be inflicted upon the myocardium.

5.—Rotter's operation renders access to the heart extremely easy, gives an opportunity of removing any extravasation of blood, and inspection of the pleural cavity with reference to the injuries.

6.—Steady the heart before attempting to suture it either by carrying the hand under the organ and lifting it up, or if the hole is large enough, introduce the little finger, as Parrozzani did, which will serve the double purpose of stopping the bleeding and facilitate the passage of the stitches.

7.—When the hemorrhage is so profuse as to preclude the possibility of suturing, with the right hand gently lift the heart out of the pericardium and introduce from below the left hand and press between the index and ring finger the vena cava inferior and its inosculation into the right atrium, and pressing upwards displace the inosculation of the vena cava superior.

8.—Professor Magnus, of Heidelberg, believes that the heart will stand complete compression for a minute and a half and incomplete for four minutes.

9.—Catgut sutures should be used, as wounds of the heart heal in a remarkably short time. The

sutures should be interrupted, introduced, and tied during diastole, not involve the endocardium, and as few as possible should be passed commensurate with safety against leakage, as they cause a degeneration of the muscular fiber with its tendency to dilatation and rupture.

10.—In cleansing the pericardium, it should be sponged out and no fluid poured into the sac, as quickly produced tension may cause serious consequences to an already disabled heart.

11.—Until every aseptic precaution has been taken the mechanical stoppage of the heart from accumulation of blood in the pericardium should be prevented by aspiration, as diminished resistance from loss of blood and want of cleanliness from hurry of preparation are largely contributive causes to the 40 per cent. of deaths from infection.

12.—Rehn suggests closing the pleura and draining the pericardial sac, but never the reverse, because of the ease of infection of the pleura, which may extend to the pericardial wound and cause the formation of pus in the closed pericardium.

13.—For drainage, tubes are preferable to gauze, as the latter is liable to cause retention of the discharge and may strangle the heart.

14.—A needle may be removed at once, but a knife blade must not be touched until the surgeon has bared the heart and is master of the situation, as an uncontrollable hemorrhage might occur from premature extraction.

Besides operations for injuries it has been proposed to operate on some forms of heart disease. Experimental pericardiectomy has been carried on by Parlavacchio to determine its therapeutic value, and possible application.

A number of cases are on record of congenital absence of the pericardium, and in most of these, which he summarizes, there were no disturbances calling attention to its absence, which was an autopsy surprise. There were circulatory disturbances in a few, but the prognosis of this defect seems to be good when the thoracic organs are normal. Experiments on ten dogs showed that pericardiectomy is an operation on about the same plane as splenectomy or partial thyroidectomy. It should be regarded only as a last resort, but under these conditions it has good prospects of success. Broad resection of the pericardium may, therefore, be considered in cancer of the adjoining organs or in chronic pericarditis resisting conservative measures. The pericardiectomy would leave a defect which might favor infection of the pleura, but pleurisy is much easier to cure than pericarditis, and it is the lesser of two evils. The Rydegier

technic gives ample access. He does not try to avoid sacrificing the left phrenic nerve, having found that the functions of the diaphragm do not suffer by its removal, while its retention might result in dangerous adhesion of the nerve to the heart. The technic should be dominated by the necessity of avoiding injury of the auricles and large vessels and to refrain from touching the right wall of the pericardium, for fear of injuring the phrenic nerve or the other pleura, which would be liable to entail paralysis of the diaphragm or bilateral pneumothorax. In none of his dogs were the adhesions after pericardiectomy very calamitous. The fewest adhesions were found in dogs with more extensive resection. Some of the dogs are in apparent good health to date, five or six months since the operation, although all grew thin at first and the left ventricle became hypertrophied.

Morison (*Lancet*, July 4, 1908) refers to the possible operative treatment of *corbovinum*. In this condition he believes that it is the bulk of the heart and the force of the systole which are the determining factors in the situation and that operation to afford room adequate for the free action of the enlarged organ was the primary consideration whether the organ itself was tethered or not. With a large heart, powerfully pulsating against hard and resistant structures, he asks, what is more natural than that the striking and indirectly struck organ should from time to time develop a condition of excitation or erethism in excess of what is normal to it, and that such erethism should be associated with increased systolic pressure, augmented by mental causes due to subjective discomfort in various degree, from uneasiness to pain.

Morison describes the case of a youth of 19 who had exaggerated aortic valvular disease, severe attacks of retrosternal pain, accompanied by quickening of pulse and heart beat and rise of systolic blood pressure, these phenomena subsiding with the pain. The cardiac action was heaving and concussive, the heart enlarged, and thrusting, not simply against a soft interspace, but against an unyielding rib. A condition of erethism was thus induced, leading to the attacks. Four and a half inches of the fifth rib and five and a half of the sixth were removed. The effect of the operation objectively and subjectively has been very satisfactory. The carotid and suprasternal pulsation is less marked, the chest capacity is increased, the painful attacks have almost disappeared, and when present are much less severe.

Chronic Valvular Lesions.—Cushing and Branch,

acting on a suggestion of Sir Lauder Brunton that it might be possible to relieve mitral stenosis by surgical measures, have succeeded in obtaining operative recoveries after a considerable number and variety of experimental valvular lesions in dogs made by a direct approach to the valve through the heart wall. "It remains to demonstrate the possibility that an experimentally produced mitral stenosis with compensatory failure can be symptomatically improved by division of the narrowed mitral orifice on the living animal, before attempting by a similar procedure to relieve the corresponding pathologic lesion in man."

Heart Massage as a Means of Stimulating Respiration.—T. A. Green (*Lancet* of December 22, 1907) believes that in suitable cases heart massage is of decided value to the practical surgeon. The kinds of cases in which it may be used with a fair prospect of success are:

(1) Cases of primary arrest of the heart in a condition of acute dilatation from poisoning by an overdose of a powerful volatile drug, such as chloroform; (2) cases where the gradual accumulation of volatile poisons, such as chloroform, leads to primary paralysis of the respiratory and vasomotor centers followed by stoppage of the heart; (3) cases of asphyxia, and (4) cases of suspension of the functions of the vital centers from simple exhaustion or injury, and consequent stoppage of the heart.

The order of procedure in these cases of sudden heart and respiratory failure should be as follows:

1.—Immediate lowering of the head and the commencement of artificial respiration and tongue traction, taking care that a free access of air to the lungs is possible, and therefore implying tracheotomy if necessary.

2.—If the abdomen is open, pressure on the abdominal aorta to confine the circulation to the upper part of the body. If it is not open the intravenous injection of adrenalin solution and the application of Crile's rubber suit or, failing this, tight bandaging of the limbs and abdomen.

3.—The subcutaneous or intravenous injection of normal saline solution, partly to raise the blood pressure, and partly to dilute any poisons which may be in the blood and tissues.

4.—If the above methods have not been successful after being applied for from eight to ten minutes heart massage by the subdiaphragmatic method. This route should always be adopted, unless the chest is already opened or to be operated upon, as

being the easiest way of access, the one fraught with least danger to the patient and the one which has given the greatest percentages of success. The time is fixed at from eight to ten minutes because eight minutes is the limit of the interval at which up to the present time a complete success has been obtained in man, and if it is exceeded the danger of the production of fibrillary twitchings, inability to restore consciousness, and the development of spasms in the voluntary muscles with consequent failure of the manipulations have to be taken into consideration. The unavoidable extension of this limit, should, however, be no bar to the adoption of the method, as very hopeful results have been obtained, even when forty-five minutes have elapsed from the onset of the syncope before it has been tried.

5.—After normal pulsation has returned to the heart, artificial respiration must be continued until spontaneous breathing has been restored or until circumstances make it improbable that such restoration will be obtained.

Resuscitation by Heart Massage. C. S. White, (*Maryland Medical Journal*, September, 1908), reports the case of a boy of twelve in whom life seemed extinct after chloroform administration, notwithstanding the application of the Trendelenburg position and artificial respiration by the Laborde and Sylvester methods. The abdomen was opened from the ensiform cartilage to the umbilicus and compression of the heart through the diaphragm with the right hand, about twenty-five times a minute, was practiced, the left hand being on the thorax over the heart. After about seven minutes the apex beat was distinct. The operation was completed at 1 P. M. The patient had convulsions at 2, 3 and 5 P. M. He died at 9 A. M., twenty hours after resuscitation. This makes the fourth reported case.

Effusions into the pericardium may be dealt with surgically with success, and it is probable that many more cases should be subjected to pericentesis of the pericardium than have been in the past.

Frequency of pericarditis, as shown by autopsy statistics varies very much, fourteen cases in two hundred and seventy-five autopsies made by Anders and forty cases in four hundred and fifty-two autopsies at the Pennsylvania Hospital, as reported by J. A. Scott. In the forty cases reported by Scott sixteen, or 40 per cent. were purulent in character. As an etiological factor pneumonia predominated, being the primary disease in twenty-two cases. In all these cases pleurisy also existed.

In seventy-six autopsies of patients dying with

croupous pneumonia thirty-eight, or 50 per cent. pericarditis was found, and in seventeen of these the pericardium contained a purulent exudate.

Besides pneumonia purulent pericarditis is found in conjunction with empyema, abscess near the pericardium, cancer or ulcer of the esophagus and in pyemic conditions generally. The diagnosis of this condition is generally quite difficult because of the fact that this is a complicating condition and the patients are usually seriously ill with the primary disease before the appearance of the pyopericarditis.

I will not take up your time with a description of the symptoms or physical signs, for they are to be found in the text-books generally. I would, however, direct your attention to the necessity of a careful examination of the chest for this condition, in patients seriously ill who complain of pain or fulness about the heart. Before fluid is extravasated there may be friction sounds, later these disappear, the area of cardiac dulness becomes increased and apex either becomes elevated or may disappear. Where this condition is suspected there should be no hesitancy in inserting a needle into the fourth or fifth space near the left of the sternum.

Surgical Considerations.—Exploratory puncture should be made as freely when purulent pericarditis is suspected as it is made in cases of suspected empyema. The presence of pus should be determined in this manner before operating, and can usually be demonstrated by the use of a hypodermatic needle a little longer than is ordinarily used. The dangers during puncture are wound of the heart or large blood vessels and possibility of infecting the pleura, but these are mostly theoretical.

The point of election for puncture is in the fourth or fifth interspace close to the left edge of the sternum. Dock points out that in pericardial effusions the position of the heart is anterior, floating on the fluid, and not far from, and perhaps adherent to the chest in front. If the result of the puncture is negative the posture of the patient should be changed or the site of the puncture shifted. In most cases the necessary incision can be made under local anesthesia and this is usually desirable because of the condition of the patient. Operation may be made either through an intercostal space or with excision of a portion of a costal cartilage.

The point of election for incision, according to R. G. Le Conte, is the fourth left interspace. beginning one inch from the sternal border and extending to the normal position of the apex of the heart, about one inch internal to the anterior mammary line. The tissues are infiltrated with Schleich's fluid

and the incision gradually deepened. When the pleura is adherent it cannot be recognized; but if its cavity is free, and the incision has been carefully deepened, air will rush in as soon as it is penetrated and before the pericardium has been opened. When pus is reached it is allowed to flow out slowly for fear of embarrassing the heart by the sudden relief of pressure. A rubber drainage tube is inserted and an ample dressing of gauze applied. This is sufficient for the time being, and the question of flushing the pericardium or resecting the costal cartilages may be put off until the physical signs show that the drainage is not good or that the tube is plugged with membranous lymph.

Intercostal incision produces no shock; it is the simplest procedure in grave cases; it permits a more extensive operation at a later period if found efficient; it permits the recognition of non-adherent pleural surfaces before the pericardium is opened, and in the majority of cases it will lead to a cure where a recovery is possible from an operative procedure. The question of the recovery of the patient is more dependent upon the cause of the pyothorax and the pathological lesions present in other portions of the body than upon the choice of an operative procedure.

In his valuable paper on this subject, Le Conte offers the following conclusions:

1. Purulent pericarditis is quite frequently overlooked in lobar pneumonia and in other pyemic states.

2. Its presence modifies the pre-existing disease to a considerable extent.

3. In diseases with high temperature the presence of purulent pericarditis depresses the fever range and increases the respiratory and pulse rate without sufficient clinical evidence of trouble elsewhere than in the pericardium.

4. It is yet to be proved that the heart, in case effusion is present in the pericardium, is always dislocated backward and upward. It is probable that in some cases the presence of fluid in the pericardium dislocates the heart either to the right or to the left. (This, of course, will occur if previous adhesion between the heart and the pericardium has occurred on either the right or the left side.)

5. The diagnosis once made, the only treatment should be incision and thorough drainage. (Paracentesis will at times relieve temporary urgent symptoms and should be performed without the slightest fear.)

6. That exploratory puncture can be made with

safety and is essential for diagnostic purposes before operation is undertaken.

7. That such puncture should be made in the fourth or fifth left intercostal space, as close to the sternum as possible, with a fine needle.

8. That pericardial dilatation does not alter the relations of the pleura to the anterior thoracic wall.

9. In the presence of pyopericarditis the overlying pleural space is usually obliterated by extension of the inflammation.

10. That incision under local anesthesia is the preferable operation in the majority of cases.

11. That Roberts' chondroplastic flap is preferable to an ordinary excision of costal cartilages when incision fails to give adequate drainage.

73 EIGHTH AVENUE.

1. Stewart, *Transactions Philadelphia College of Physicians and Surgeons*.
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3. *Münchener Medizinische Wochenschrift*, September 30, 1907.
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5. *Archives für Klinische Chirurgie*, Berlin, lxxxiv., No. 4.
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8. *Gazette des Hôpitaux*, March 29, 1906.
9. *British Medical Journal*, January 12, 1907.

RECTAL ANESTHESIA.

It is not intended for abdominal work within the peritoneum.

It is not intended for rectal work.

It is not desirable for long-continued vaginal work.

It is intended for operation about the head and neck, breast, and surface of the body.

It is a boon to operators in thyroid, mouth, throat, and any work where the anesthetizer is in the way.

—C. F. DENNY and L. S. ROBINSON in *The Journal of the Minnesota State Medical Association*.

ANNOUNCEMENT.

Publication of Prof. William K. Simpson's article, "A Case of Laryngeal Stenosis in the Adult, Successfully Treated by Intubation," announced for this issue will have to be postponed until the April number.

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WALTER M. BRICKNER, M.D., Editor
NEW YORK, MARCH, 1909.

LILIENTHAL'S METHOD OF CLOSING THE DIVIDED BOWEL.

Intestinal surgery has passed through a more or less stormy period of experimentation, during which various mechanical devices and almost innumerable suture plans for securing bowel union, have been tried and, most of them, ultimately rejected. At present most of the fairly accepted methods of intestinal closure involve a relatively simple, though precise technic of suture. In all the measures tried, both for anastomosis and for sealing up an open bowel-end, complete contact of peritoneal surfaces has always been considered a *sine qua non*.

In the method described by Howard Lilienthal (as a preliminary communication) in this issue of the AMERICAN JOURNAL OF SURGERY, our preconceived notions are violently disturbed. Deliberate peritoneal apposition is not essential to the definite closure of a sectional bowel. Lilienthal has shown this on several human subjects by no less startling a procedure than the simple application of a crushing ligature, and phenolization of the distal mucosa.

It has been amply demonstrated that the application of a crushing ligature and cauterization of the exposed mucosa is an eminently safe and satisfactory method of dealing with the appendix stump. That the same method could be safely applied to the bowel itself has, we believe, not heretofore been conceived. As much as the boldness of the procedure, we admire the boldness of the surgeon who had the

courage to try this at once on the human subject!

We shall await with interest the result of animal observations for the answer to many questions anent this new operation, which at once suggest themselves: What is the exact process of healing? Is there a clean stump, or is closure by means of an exudate? How extensive may such an exudate be? Are adhesions formed? (With the appendix, a smooth stump results, with less likelihood of adhesions than after inversion and suture.) What rôle, after all, does the peritoneum play in the final healing, when the ligature has "cut through"? (That a complete circumference of peritoneum is not essential is shown by the successful application of the ligature to the duodenum in pylorotomy). Can the same procedure be applied to the urinary bladder? That question is perhaps only academic, but comparative observations on extra- and intra-peritoneal portions of the bladder may solve the preceding question. What rôle, aside from sterilization, is played by the phenol? Are the chemical lysis and shrinkage of the stump essential to success? What becomes of this stump? (In one of Lilienthal's cases it was discharged.) Is it more often absorbed, as the appendix stump seems to be; or does it become buried in an exudate? What are the dangers of the operation? Was Lilienthal's single fatality the result, as he thinks, of faulty technic; or does it represent an inherent percentage of risk?—
W. M. B.

THE MODERN VIEW OF THE TREATMENT OF FRACTURES.

There are a few procedures in surgery in which all surgeons are agreed, and which seem to have reached a state of perfection in which no further improvements seem possible or even desirable. The treatment of fractures is one of the oldest branches of surgical therapy, and it remains still in a changing state, and still associated with differences of opinion, good, bad and indifferent results, and incriminations. Multiplicity of methods in any branch of surgery means multiplicity of unsatisfactory results. When surgeons begin to agree and unite upon certain procedures, that means that satisfactory results are being secured.

Since the introduction of x-ray examinations the treatment of fractures has made more progress than it has in any one hundred years before that time. Two important things have been learned. One is, that in the ordinary fracture of the long bones, in a large percentage of cases, the replacing of the fragments into perfect apposition is impossible; and the other is, that we have led the public

to believe that a fracture has not been treated properly unless the reposition is perfect. In fractures of the shaft of the humerus, femur and tibia, particularly, perfect reposition is very commonly not secured. We did not know this until the *x*-ray showed it. Good solid union had been secured, and restoration of function resulted; and it was assumed that the bones had been put back into normal position. Often it was lost sight of that the "rheumatism," neuralgia, eczema, edema, flat-foot, muscular weakness, etc., had any connection with an imperfectly reduced fracture of a long bone of the arm or leg which was solidly united and apparently of normal contour.

Now we know that palpation and measurements are not all sufficient to determine perfect reposition. Overriding and lateral displacement and even angular displacement may escape the most discerning eye. In many cases these conditions cannot be overcome without operation, and in most cases operation, with its additional traumatism, would do more harm than good. We must, therefore, be satisfied to secure union in a not absolutely perfect position, in many cases. This is easily proved after a fracture of these bones has been put up apparently to the satisfaction of the surgeon, by making an *x*-ray examination and observing how often defects of apposition are present. Happily the majority of such cases give a satisfactory functional result.

But now we come to the layman's point of view. He thinks of a bone as a stick or rod. When it is broken, he naturally wants the pieces put back in place: that is what he would expect a carpenter to do; and he expects the surgeon to do the same thing. Unfortunately the surgeon has led him to think that is what he can do. When a patient secures a useful limb after a fracture, we have permitted him to think that the fragments were replaced into accurate apposition. Now, if he should see an *x*-ray picture of his fragments, he might be fearful lest the result should be poor. A jury is easily misled by these pictures. It behooves the surgeon to teach the public that the reduction of a fracture is not an easy operation. Joining a broken stick is a simple thing because it is accessible to sight and touch; but a fracture may be compared to a stick surrounded by a mass of elastic bands, all attached to it and pulling in several directions, and which can neither be seen nor felt.

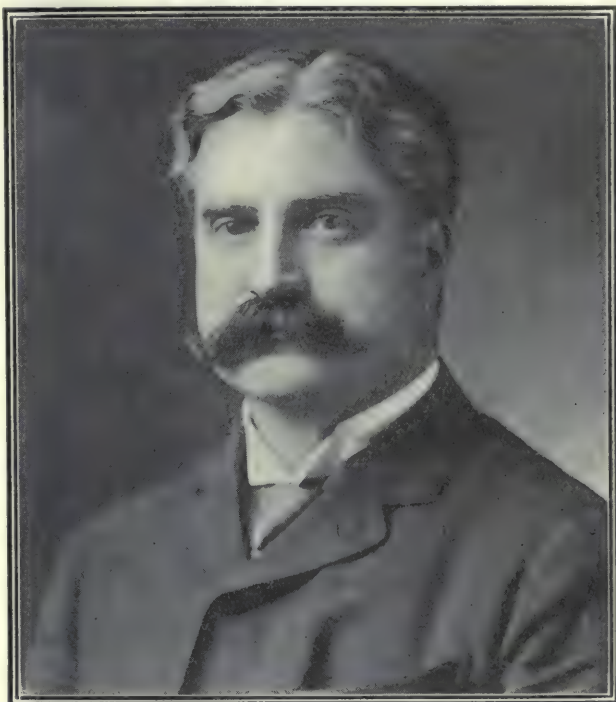
When we have put the public mind straight on this matter, there will be fewer incriminations and fewer suits for malpractice. When we secure a good result, let us not promulgate the notion that we have put the fragments back exactly where they

belong unless we can prove it by the *x*-ray; but, instead, let us be contented with the assumption that we have done the best that we could.—J. P. W.

WILLIAM T. BULL.

William Tillinghast Bull, at the age of sixty, died on February 22nd, of a carcinomatous growth of the neck.

As a young man he did epochal work in the surgery of gunshot wounds of the intestines. This, especially, attracted attention to his ability. It brought to him opportunities that eventuated in the eminent teaching position which, in association



with those other masters of surgery, Robert F. Weir and Charles McBurney, he occupied for many years at the New York College of Physicians and Surgeons. His important contributions to appendicitis, hernia, and many other subjects, clinical and operative, are too well known to need repeating here.

His unfailing consideration of his colleagues and his modest estimate of his own services, won for him a remarkable following in the profession and among the laity, and he was still very active in his practice when his recent illness overtook him.

The loss of Bull, the eminent surgeon and inspiring teacher, is great indeed. But Bull, the man, Bull, the prince of colleagues, will be mourned, and his memory will be cherished until his last patient, his last associate, shall have joined him in the great army of the dead.

Book Reviews.

Medecine Operatoire des Voies Urinaires. Anatomie normale et Anatomie pathologique chirurgicale. Par J. ALBARRAN. Large octavo; 991 pages; 561 illustrations. Paris: MASSON ET CIE., 1909.

Whereas we deplore the lack of good American books on diseases of the genito-urinary system, we cannot but greet with pleasure this accession to urology in the form of a foreign book well worth the consideration of both the specialist and general surgeon. Coming from the pen of Albarran, the most eminent of Guyon's pupils, the volume necessarily embodies much of what is authoritative in the French school, and as such must be welcomed.

In his preface, the author states that he purposes to write a work on operative surgery of the urinary tract, clearly signifying his intention, however, to omit everything but that which, in his own experience, has been found best and most useful. It is this feature which—inasmuch as it is closely adhered to—makes the book of inestimable value, for in its present form it must be regarded as an exposition of the most modern views held by at least one school of French urologists.

In a compass of 991 pages, the author discusses the operative procedures done on the kidneys, ureters, bladder, prostate and urethra, dividing the subject matter into five distinct parts. Especial attention is given to anatomical considerations; these are presented in such a thorough scholarly fashion and are so admirably illustrated by photographs, line drawings and half-tone reproductions bearing upon the relations of the various structures encountered in operating and upon topography, that one cannot but feel that, in this particular, the author has added a feature of no mean worth. Throughout the anatomical sections the text is replete with allusions to the surgical importance of the various morphologic details, the practical viewpoint always remaining prominent.

As for the treatment of the operative procedures, we can recall but one book, namely, Légars's "Imperative Surgery," in which the description of technic is set forth in so interesting a manner. In perusing these portions we are always kept alive with feeling that we are dealing with a patient whose condition demands this or that surgical intervention. And so the subject of nephrectomy is discussed, not in a general way, but separately for the various conditions requiring it; 3 pages are devoted to nephrectomy demanded by trauma, 3 pages to hydro-nephrosis, 6 to pyonephrosis, 14 to tuberculosis, 26 to neoplasms, etc.

The preparation of the patient, the after-treatment and the complications are matters which have not been neglected, and the paragraphs devoted to these will surely be of value to those surgeons whose experience in this field has not been as wide as that of the author.

As an example of book-making, the volume does credit to the well-known firm of Masson and Company. It, too (as well as some of the German books that have recently appeared), bears the stamp of modernism that first emanated from American publishers. The illustrations are excellent.

Although we have already been sufficiently profuse in our laudations, we cannot close without expressing the hope that the volume will serve as an example to the profession of this country, and that it will find a permanent place in the library of every American surgeon.

New York Charities Directory. An authoritative classified and descriptive Directory to the philanthropic, educational and religious resources of the City of New York. Compiled by H. R. HURD. *Eighteenth edition.* Duodecimo; 813 pages. New York: THE CHARITY ORGANIZATION SOCIETY, 1909. Price, \$1.00.

The benevolent activities of New York City—private and municipal—are so numerous, and so diversified that this directory is a necessity to its charity workers. To those also, who are studying, in New York, hospital, settlement, relief or any other of the numerous sociologic problems, it will be of distinct service.

Atlas und Grundriss der topographischen und angewandten Anatomie. (Lehmann's Medizinische Atlanten, 1 Band.) Von DR. MED. OSKAR SCHULTZE, Professor der Anatomie in Würzburg. Zweite vermehrte Auflage. Large octavo; 224 pages; 22 multicolored plates and 205 illustrations, also mostly in color, from originals by the artists A. Schmitson and K. Hajek. München: J. F. LEHMANN, 1909.

Of the first edition of this beautiful atlas and text-book of topographic and applied anatomy, an English edition was prepared by Professor George Stewart in 1905, and the work is no doubt a fairly familiar one to American surgeons and students.

In this second edition Professor Schultze has introduced 115 new illustrations, many of them multicolored, most of them reproduced from paintings by K. Hajek. The text has also been enlarged, but not proportionately. The remarks on applied anatomy are not, as in the first edition, interwoven with the topographic anatomy in the text, but are separate, as an appendix, under each anatomical division.

This atlas must be seen to be appreciated.

Precis de Pathologie Chirurgicale. Tome I; Pathologie Chirurgicale générale, maladies générales des tissus crâne et rachis. Par P. LECÈNE, Professeur agrégé à la Faculté de Paris; R. PROUST, Professeur agrégé à la Faculté de Paris; et L. TIXIER, Professeur agrégé à la Faculté de Lyon. Tome II; Tête, cou, thorax. Par H. BOURGEOIS, Oto-rhino-laryngologiste des hôpitaux de Paris, et CH. LENORMANT, Professeur agrégé à la Faculté de Paris. Small octavo; Volume I, 1,028 pages; Volume II, 984 pages; illustrated. Paris: MASSON ET CIE., 1909.

These are the first two of a series of four volumes in which practically the whole subject matter of surgery, with the exception of operative procedures, is to be discussed in a concise manner. The first volume includes general surgical pathology, surgical infections and the diseases of the brain, cranium, spinal cord and vertebral column. In the second compendium, the rest of affections of the head, and those of the neck and thorax are treated.

It is unfortunate that the well-known authors have not evidenced a wider recognition of the more recent work on pathology. Throughout the work the tendency to adhere to much that is classic and of French origin, is manifest. However, in spite of this, there is much deserving of commendation. The student of surgery will find these compends of great value in the exposition of those conditions that are but infrequently met with in our own hospitals. Thus the matter of syphilis of the joints and bones, the inflammatory diseases of muscles, the affections of salivary glands, these and many others are admirably presented. The sections on diagnosis are excellent. Here as in other French text-books, the masterly influence of Duplay is reflected by his pupils.

We can heartily recommend the work to those American students who wish to possess a handy reference book that will be serviceable both in the rapid review of a subject and in clearing up their conceptions of many doubtful and rare affections.

Obstetric and Gynecologic Nursing. By EDWARD P. DAVIS, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College, Philadelphia; Obstetrician to the Jefferson Hospital; Obstetrician and Gynecologist to the Philadelphia Hospital. *Third edition.* Octavo; 436 pages; 90 illustrations. Philadelphia and London: W. B. SAUNDERS COMPANY, 1908.

This book, considerably enlarged in this edition, is a comprehensive work, within its scope, and thorough even in the elementary details. Part 1, on The Nursing of Obstetric Cases, embraces the anatomy and physiology of pregnancy, nursing in normal and complicated cases, and the care of infants. Part 2, Gynecologic Nursing, makes interesting reading, and is likewise exact in detail. An appendix on Dietary and the preparation of surgical supplies makes a good conclusion to the volume.

The undergraduate nurse, especially, will find this a helpful manual.

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THE LINGUAL TONSIL.

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BROOKLYN, N. Y.

Of the upper masses in the "lymphoid ring of the pharynx," i. e. the pharyngeal and faucial tonsils, much has been written, but of the lower or lingual tonsil we hear relatively little, and as this organ when diseased gives rise to symptoms which are often unrecognized, it seemed to the writer, that a short paper on this topic might not be unworthy of attention.

The first mention in literature concerning the lingual tonsil was by Heymann and published in the *Berliner Klinische Wochenschrift* in 1877, and the first paper in the United States was by H. Holbrook Curtis, published in the *New York Medical Journal* in 1884, in which the author reported three cases of hoarseness and loss of voice, from enlargement of the lymphoid tissue at the base of the tongue. In 1886 Swain published in the *Deutsche Archiv für Klinische Medizin*, a very complete paper on this subject, which has been freely quoted by others in the contributions which were made during the next few years, both in this country and abroad. While, from time to time, these articles appeared, relatively little attention has been paid to them, for in Burnett's System of Diseases of the Ear, Nose and Throat, published as late as 1893, the lingual tonsil is not mentioned.

The collection of lymphoid tissue situated at the base of the tongue between it and the epiglottis, to which the name lingual tonsil has been applied, consists of a flattened mass, often divided by a median depression, giving it the appearance of two glands. In amount it varies widely in health, and its diseases, contrary to those of the pharyngeal and faucial tonsils, are mostly of adult life, although a case has been recorded of a child of two years dying of asphyxia from enlargement of this gland. It tends to increase rather than diminish after puberty. In structure it corresponds to the other tonsils and is subject to the same disease, e. g. acute catarrhal, lacunar and phlegmonous inflammations, mycosis,

tuberculous and syphilitic involvement, and hypertrophic changes. It may also be the seat of tumors. It may be involved with other disorders of the throat, but is often independently affected.

The catarrhal inflammations present the usual symptoms of pharyngeal inflammation, as hypersecretion and dysphagia with the addition of a feeling as of a foreign body in the throat. "Swallowing over something" is the way it has been described; hoarseness, and a persistent tickling, or spasmodic cough are usually present. Occasionally the glands at the angle of the jaw are enlarged and there may be tenderness on pressure, over the hyoid bone. This condition often accompanies or follows an attack of influenza or the exanthemata, and is often present in gouty conditions, and stomach and intestinal affections, such as acid indigestion with eructations, chronic constipation, etc. The constitutional treatment of this affection is that of the underlying condition, if any can be found, conjoined with the administration of Sodium Benzoate. Locally such agents as Alum, Tannin, Sulpho-Carb. Zinc, Menthol and Iodine in proper solution, swabbed directly on the parts may be employed. My personal preference is a mixture of Menthol gr. xx-, Iodine gr. ss, Camphor gr. viii in Albolene \mathfrak{z} i and Silver Salt solution in varying strengths.

Phlegmonous inflammations in my experience are rare. In addition to the febrile symptoms, there is great pain in the throat localized in the region of the hyoid. The pain is increased by attempting to protrude the tongue. There is intense dysphagia, with pains shooting to the ear; increased flow of saliva, and sometimes dyspnea. Edema of the glottis may be caused by the inflammation. The laryngoscope shows a long red swelling in front of the epiglottis, which it sometimes pushes back. As a rule abscess forms quickly; it often ruptures spontaneously; if not it should be promptly incised. The local and general treatment is that of other faucial inflammations.

Mycosis occurring here presents no special characteristics other than the presence of the yellowish masses due to the leptothrix, and is best treated, in my experience, by curetting and rubbing in a mix-

ture of Liq. Iodi Comp. ʒss. in Glycerole of Tannin ʒi.

Of syphilitic involvements little need be said. They are only incidents in the course of that malady, and the treatment, aside from local cleansing, is that of the general disease.

As to primary tuberculosis of this gland, much has been written both pro and con, and an attempt to review the evidence would require too much space and leave us just where we started. It is possible some cases may have occurred, but for practical purposes primary infections may be ignored, as they rarely come under observation before other symptoms of tuberculosis are present. Freudenthal in a paper read before the Greater New York Association, January 8, 1906, called attention to the fact that a large number of tuberculous patients in his service at the Montefiore Home and Bedford Sanitarium for Consumptives had enlarged lingual tonsils, and that the cough could be greatly ameliorated by appropriate local treatment. Tubercular ulcerations may be treated by curettage, lactic acid, creosote, electrolysis, etc., as in other localities.

Hypertrophy of the Lingual Tonsil.—While giving rise to local symptoms, as in the foregoing, is also the cause of various reflex disturbances, such as asthma, globus hystericus, spasm of the esophagus and aphonia; and as the element of pain is generally lacking, disturbances from this cause are often overlooked. The hypertrophy varies in amount from the enlargement of a few follicles, to the formation of a distinct tumor, and the symptoms seem to depend more on the sensitiveness of the individual than on the amount of hypertrophy present. (Swain). The disorder is more common in females. The hypertrophy includes both the glandular and fibrous structures and accordingly as one or the other predominates will the growth be friable or resistant. Like the acute cases, enlargement of the tissue may be due to inflammation with or without involvement of the neighboring structures, and associated with disorders of the gastro-intestinal tract. McBride says, "the co-existence of nasal impermeability in a few cases makes me think respiration through the open mouth may be a factor." As the hypertrophy is often associated with enlarged veins, some writers regard hypernutrition from the increased blood supply as a cause.

The most constant symptom is, as Newcomb expressed it, "a pharyngeal disesthesia" of varying degree, coupled with a desire to clear the throat and cough. The sensations complained of are tickling, a feeling of fulness, of a foreign body, or of being grasped by the throat. When the mass is quite

large, the epiglottis sometimes becomes incarcerated, causing laryngeal spasm. The voice is variously affected. Hoarseness in different degrees—is easily fatigued—interference with singing, partial or complete aphonia, either from mechanical interference or reflexly.

The cough is almost invariably worse at night. In the milder cases the cough is hacking, and appears at longer or shorter intervals; in others violent, spasmodic and continuous. In the latter cases the sputum is often blood stained or accompanied by hemorrhage. This is the class of cases mistaken for pulmonary tuberculosis. While all of the symptoms enumerated have been recorded in different cases, none presented them all; also it is well to note that a considerable hypertrophy may exist and present no symptoms whatever. In determining whether the growth is the cause of symptoms, adrenalin and cocaine will be found useful, their employer temporarily abating the discomfort; also touching the tissue with a probe may excite cough or spasm.

Treatment.—The soft villous growth may be removed by the curette; projecting masses can be snared; hot or cold, or cut off with the guillotine or scissors. Broad, flat hypertrophies must be destroyed by escharotics, either chemical or galvanocautery. I prefer the latter. But a small amount of tissue should be burned at a time on account of the danger of excessive inflammation which may involve the larynx, and an interval of at least three days should exist between the cauterizations. After the operation astringents and sedatives are indicated.

Varix.—Enlargement of the veins at the root of the tongue are not uncommon. While they may appear without glandular involvement they are so commonly associated with disease of the lingual tonsil that it seemed proper to speak of them in this connection. Many times they give rise to no symptoms whatever, at others the subjective sensations and reflex symptoms are those of a mild hypertrophy. In attempting to clear the throat, a rupture may take place, the hemorrhage varying from blood stain to an amount sufficient to alarm the patient. The treatment is to obliterate the vessels by galvanocautery puncture.

Tumors.—Fibroma, papilloma, lipoma, angioma and cysts have all been reported. They present nothing unusual. Only the latter have come under my observation, unless the case I shall relate belonged to the first class. An accessory thyroid has been found in conjunction with hypertrophy of this organ. Regarding these growths Winslow says "A moderate size, rounded, elastic tumor, situated at

the base of the tongue and covered by smooth, normal or congested mucous membrane, not painful, with no metastasis, growing slowly, and occurring usually in young women, is almost certainly a neoplasm containing thyroid tissue. These growths do not usually present any alarming symptoms, but should be removed when they give rise to discomfort, or cause difficulty in deglutition or respiration."

In conclusion I shall relate a few illustrative cases:

CASE I. School teacher, 22 years, female. Had tonsils removed when a child. Complaints of fullness in throat, voice tire, constant desire to cough, which is hacking and affords no relief. Examination shows moderate hypertrophy of lingual tonsil. Removed with guillotine. Cure.

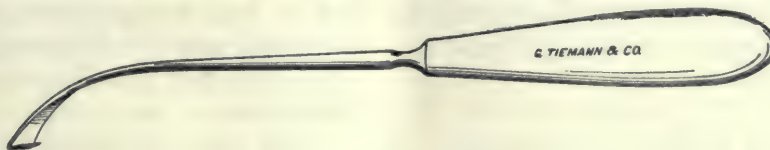


FIG. 1.



FIG. 2.

CASE II. Widow, 40. Husband died of consumption. For past four weeks severe cough, worse at night, spasmodic dyspnea, is nervous and apprehensive. Pharynx slightly congested. Lingual tonsil red and swollen, veins dilated, now under treatment and improving.

CASE III. Male, 30. Was sent West for lung trouble five years ago—returned cured after two years. I was called for hemorrhage, which had ceased on my arrival. Patient had spit up about an ounce of blood. No rales in chest and a recent clot at base of tongue revealed the source of the bleeding.

CASE IV. Woman, 45. Complained of feeling something in her throat—some difficulty in swallowing—no dyspnea. Examination showed a cyst at base of tongue half an inch in diameter in the midst of hypertrophied tonsillar tissue. Puncture with galvano-cautery; partially refilled at next visit, three days later, when a second burning completed the cure.

CASE V. This occurred in my junior days, about fifteen years ago, and as the case presents some unique features I report it somewhat at length. The patient was a married woman of 23, with good previous history and healthy parentage. Was somewhat anemic, and rather thin, but not at all cachectic in appearance. She was nursing a child of about nine months, which doubtless had something to do with her general condition. The local symptoms complained of were of about a year's standing and were as follows: At first a feeling of fullness in

the throat with a desire to clear it, voice husky; later a sensation of a foreign body; difficult deglutition, then soreness, especially on swallowing. A few days previous to her coming to the dispensary she had discovered a lump on the back of her tongue.

On opening the mouth the top of the tumor could be easily seen; it was inflamed and eroded. The laryngoscopic mirror showed an ovoidal mass about $\frac{3}{4} \times \frac{7}{8}$ inches filling the hyoid fossa. It completely hid the epiglottis from view, and rendered it impossible to see the cavity of the larynx. The surface of the growth was nodular. Not knowing what I had to deal with I called in my chief who was equally in the dark. None of the text-books available gave us any light on the subject and we came to the conclusion that the tumor was of epiglottic origin and as the surgical facilities of the

Eye and Ear Hospital were rather primitive at that time and wishing further consultation, the case was taken to the Brooklyn Hospital for operation. The surgeon in attendance was inclined to regard the growth as an accessory thyroid, but suggested that a piece of the tumor be snared off and submitted to the pathologist of the institution, which was done. Pending the report of the microscopical findings the patient became dissatisfied and returned to her home. The pathologist turned in a diagnosis of "alveolar carcinoma" and advised a most radical operation, removal of the tongue and larynx. As the clinical symptoms did not seem to warrant such extreme measures, it was decided to snare off the growth. The operation was performed by Dr. Sherwell at the Eye and Ear Hospital under ether, using a stout nasal snare and heavy piano wire. When the operation was three-fourths completed the snare broke, the growth being very hard to cut, and the finish of the operation was deferred two days until a heavier instrument could be procured; the wires being left *in situ*. The two days strangulation rendered the removal easy, and the patient made an uninterrupted recovery. Fortunately the epiglottis was not included in the loop, as it was in no wise involved. The case was kept under observation for two years and as there was no recurrence by that time the patient was dismissed, with instructions to report if any untoward symptoms developed. She was never afterward heard from.

Since the above article was written I have devised two new instruments for the removal of the lingual

tonsil, which singly or combined are adapted to the ablation of any growth. These, having been successfully tried both by myself and by colleagues, I feel warranted in offering to the profession.

The curette (Fig. 1) is a curved "hoe-shaped" instrument, with a sharp cutting edge, and is introduced beyond the hypertrophied tissue, and with a combined pulling and lateral movement the growth is severed, either entirely, or in some situations the removal is completed by the forceps (Fig. 2). This has the usual lingual curve, and has rounded cup-shaped blades extending below the general plane of the instrument, which cut from the point to the junction with the shaft. The blades are so ground as to force them into the growth, and they do not slip off as does the ordinary lingual scissors or guilotine. The instruments are readily sterilized.

157 CLINTON STREET.

EARLY DIAGNOSIS OF CARCINOMA OF THE UTERUS.

ISAAC L. WATKINS, M.D.,
MONTGOMERY, ALABAMA.

If an apology is necessary for the few remarks that I propose making on this subject, it is that our operative results for cancer of any portion of the body, and especially of the uterus, is, even in the hands of our most expert operators, far from satisfactory. Two per cent. of recoveries is doubtless a liberal estimate. The mortality attending the operation, and the very small number of successes, has been taken advantage of in arguing the unjustifiability of the operation.

In order that we may have better operative results, there are two conditions which we must improve, namely: An earlier recognition of the cancerous condition, and some improvement in our technic in operating. The so-called radical operation for carcinoma of the uterus has never been universally accepted, and in my opinion has no good grounds for its acceptance, and in principle is wrong.

In seeking to place the criticism for this lamentable state of affairs, it has been ever and almost universally the custom to lay the blame at the door of the general practitioner since he is the one to whom these women first apply for advice. While I am not willing to excuse any man from the law on account of ignorance, I am thoroughly convinced that if the surgeon or pathologist would establish a more reliable symptomatology, or some kind of a better working basis by which the condition could be recognized by the thoughtful practitioner, the

end results in these cases would be very much improved. Notwithstanding that within the last few years an almost innumerable number of articles on some phase of the subject, cancer of the uterus, have been written, I am not aware of the existence of a single pathognomonic symptom of carcinoma of this organ. It is an established fact that in many of our hospitals as many as 65 per cent. of the cases which apply for treatment are turned away as inoperable, and that of those presumably operable, another large percentage are doomed to disappointment when they find that their condition is incurable.

While there are many things regarding the etiology and histology of cancer yet unknown, our present knowledge justifies the opinion that in nearly all cases of malignant disease there is a time when it is possible to eradicate the process completely.

While this state of affairs exists, we shall be forced to satisfy ourselves by urging, with all the power within us, the hearty co-operation of the man who daily sees these poor unfortunates, and beg that they without hesitation regard the grave importance of even the slightest suggestion of cancer.

Determining the question of a symptomatology of carcinoma of the uterus can at best be but imperfect. We can, however, eradicate a few of the erroneous ideas that have existed from time immemorial in regard to the irregularities of the menopause, and, also, the fallacious belief in the influence of heredity. I am glad to say that in the more enlightened circles the professional lethargy which has so long retarded advancement in this respect is rapidly disappearing. It is a commendable disposition on the part of many physicians to teach their patients that any irregularity in the menopause is strongly suspicious of malignancy, and that it justifies a careful investigation, rather than a prescription for some of the numerous useless remedies. And, further, it is not necessary for any of their ancestors to have had cancer. It should be the purpose of every physician to teach his patients that the irregular discharges of the menopause are not in any sense typical of normal conditions. This one symptom has probably been misinterpreted more frequently than any other symptom of this pathological state. It should also be known that it is not essential to have a cancerous family history before one may develop it; so often in consultation I have heard the attending physician spend several moments in trying to determine whether or not a former ancestor had ever had

cancer, for the purpose of establishing the diagnosis. As a matter of fact, this theory of heredity has not the least foundation so far as our knowledge goes.

The point I wish to emphasize is the great dread that men have of being regarded alarmists. For my part, nothing pleases me more than to hear a man say, "I fear a given case has beginning cancer," and nothing appeals to me as more worthy of our attention than to determine the truth or falsity of the condition in such a case. We should encourage all such efforts. If the suspicions are confirmed we may congratulate ourselves that we have a favorable case. If proven untrue, it will be a pleasure to announce the fact to the woman.

There are some conditions which must be taken into consideration in weighing the value of these symptoms. It is generally known that between the ages of forty and fifty years the largest percentage of cases occur. The next largest is from thirty to forty years; then from fifty to sixty, and from sixty to seventy, and then from twenty to thirty.

No statistics at my command indicate that any influence is exerted by the frequency of pregnancy in the production of cancer. This statement is especially applicable to cancer of the cervix. It is rare to find carcinoma of the cervix in nullipara, except where the cervix has forcibly been dilated. Kelly reports having seen three cases where no dilatation had been practiced. Miscarriages do not in any way occupy a causative relation. Cullen states that about one-third of all the cases reported at Johns Hopkins Hospital gave histories of having one or more miscarriages.

The early symptoms are only suggestive; but when they occur, there should be no time lost in making a thorough investigation, especially when found in a woman between the ages of thirty-five and fifty.

In a study of these suspicious cases, it is always important to get a very accurate history of the woman's habits, and her condition from the time of her early menstruation. The question as to whether or not children have been born, although not conclusive, is important in estimating the value of symptoms. The conditions that will help us most in recognizing the lesion in its earliest stages are some deviations from the normal menstruation, the presence of other uterine discharges, or a recurrence of a bloody discharge after the menopause. These changes may come in the form of an excess or an intermenstrual discharge. In a woman beyond the age of thirty these symptoms should always be regarded with suspicion. This is

especially so when these changes are easily produced. They may be caused by physical or mental conditions. A woman with beginning cancer will nearly always bleed from violent exercise, from handling the uterus (as in massaging), or from the use of instruments. A symptom which should always be regarded as suspicious is the presence of a slight stain of blood on a tampon that has remained in the vagina a day or two. The value of these symptoms is increased when the woman gives a history of a little unusual leucorrhea for a few months just following menstruation. When such discharges come as a result of mental impression, as fright or joy, they are not to be regarded with the same degree of suspicion. Unfortunately it has always been the custom of authors to give as prominent symptoms watery, acrid or blood-tinged discharges. I wish to emphasize that the above symptoms, like pain, generally occur only when in the somewhat advanced state of cancer.

The menstrual history is peculiar to each woman, as probably has been noticed by every one; for instance, if accompanied with pain, the time of the occurrence and severity are about the same. The amount of the flow, the character and intermission, come with marked regularity. Some women always have what may be regarded as intermenstrual pains, coming midway between the periods, while others never have it.

It is in cases of carcinoma of the body that we have earlier changes in the character of discharges. Here the woman will describe an increased quantity of flow, or some other abnormal condition. The menstruation will come a few days earlier and last a few days longer, and the woman will be left with a feeling of depression without experiencing the relief which usually follows the function. As a rule, it will be possible to make them recall that the last several menstruations have terminated with more or less leucorrheal discharge, having some odor. It is important to remember that many women for one reason or another will not admit the existence of many of these slight changes, as they regard them as unimportant.

With the full coöperation of the patient, and an earnest effort on the part of the physician, it would be very rare when some such condition as above described could not be found in very early stages of carcinoma of the body.

When in those cases that have passed the menopause there is found what is so often regarded as a return of menstruation, we should at once be put on our guard. Careful observation of the character of the discharge will aid us in determining whether it

is caused by some fibroid growth or whether it is due to cancer.

It is only necessary to call to mind the gross appearance of the endometrium, and remember the nature of the subsequent degeneration, in order to understand the reasons of the discharge. We have under these circumstances an increased blood supply more delicate than in the normal mucosa, hence the abundant discharge. When degenerative changes have taken place, small particles of necrotic tissue are apt to be included in the flow and always cause an offensive odor. The hemorrhages from carcinoma of the body are much less frequent than from carcinoma of the cervix. This is due to a better protection from traumatism.

The diagnosis of a squamous cell carcinoma of the cervix is more easily made than carcinoma of the body on account of its somewhat exposed position. The proper observance of the early symptoms of this form would frequently enable us to make an early diagnosis. There is protracted menstruation that at times approaches flooding; a more or less constant leucorrhea slightly tinged with blood, and this especially if the douche nozzle is used. Should the woman have passed the menopause, this is likely to be regarded as a return of the menstrual flow. The condition that makes her doubtful is the frequency of the flow. The hemorrhage may occur at intervals of two or three months, and at times may be very profuse; or it may occur with only two or three days' intermission. As a rule, there is more or less leucorrhea all the while. These symptoms are not infrequently disregarded, and are explained as resulting from a so-called ulceration, a term which I am glad to say is rapidly disappearing from medical literature. I have heard of cases in which none of these symptoms occurred, and the disease was not recognized until it had become far advanced. Fortunately they are very rare.

In giving some idea as to the frequency with which these symptoms may occur, I cannot do better than to quote a paragraph from the excellent work of Kelly and Noble, in which they give a series of observations in five hundred and nineteen cases by Waldstein. In this number there were 120 cases of a typical uterine hemorrhage, and 75 cases of leucorrheal discharge. In sixteen cases there was simply an increase in the menstrual flow. In only seven cases was there any pain, and this was noticed as a special form of backache. From this analysis it is seen that hemorrhage, or some variation in the menstrual function, is a valuable symptom. To my mind, 120 cases out of 219 given, in which variation in menstruation occurred, is far below the fact.

It is this point, as I have stated above, which I wish to impress, viz.: That to properly appreciate and determine the true value of this symptom we must have a very accurate knowledge of the present and past character of the woman's menstrual history. This is quite impossible without her thorough coöperation, and she should be instructed that the correctness of the diagnosis will depend on the accuracy of her answers in regard to these atypical discharges. Do not, under these circumstances, prescribe some of the various uterine regulators or tonics, but insist on a vaginal examination at once. If we have done our duty in teaching the importance of these symptoms, it will not be difficult to get any woman to submit to an examination.

Vaginal examination in the early stage will show a slightly enlarged cervix, with some hardness, involving probably only a small portion of the organ. There may be a few fine finger-like processes projecting from the surface which must not be mistaken for cancer, as they are nothing more nor less than the Nabothian glands. The surface is still unbroken in this stage. The disease may begin on the vaginal mucous membrane or in the cervical canal as high as the internal os. When it begins on the vaginal mucous membrane it is frequently mistaken for ulceration or venereal ulcer. Its appearance has no marked characteristics by which it can be recognized. Therefore, it would be wise to consider all such ulcers malignant until they are proven otherwise. When it begins on the internal surface of the cervical canal, the os early becomes patulous and the tissues break down very promptly under pressure. Under these circumstances the normal secretions of the organ may mislead us, but a close observation will nearly always show more or less necrotic tissue.

A train of symptoms somewhat like the above, arranged according to the views of each individual, would be sufficient to justify a consideration of the question of malignancy. In this event one's duty is clear. The microscope should be promptly resorted to in order to determine the truth or falsity of the suspicion. When the malignant condition has developed sufficiently to be recognized macroscopically, it then, as a rule, has progressed beyond the aid of surgery. In cancer of the fundus there is no other means of making a diagnosis than by the use of the microscope. Clinical observation, as stated above, is at best only suggestive. For those doing only a limited amount of gynecological work, it will be quite difficult to thoroughly appreciate these early symptoms. In a statement made by Dr. J. G. Clark, on this subject, in the *Gynecological*

Department of the Pennsylvania Hospital, cancer of the cervix has been discovered through the aid of the microscope in but one case of a large number where it was not suspected. In cancer of the fundus, however, several cases have been diagnosed by the microscopic examination of uterine scrapings, and the patient relieved by an early operation.

Carcinoma of the uterus may be classified according to its location, as carcinoma of the body or carcinoma of the cervix. Carcinoma of the cervix may be divided into two groups: those arising on the vaginal wall, and those in the cervical canal. The squamous cell carcinoma of the cervix comprises nearly one-third of all cases of cancer of the uterus. This form is rarely found elsewhere than on the cervix. In a few instances it has been found in the body. The cylindrical cell carcinoma of the cervical portion is infrequent as compared with the squamous cell, though it may arise from the mucous glands of the cervix, or from the surface epithelium. In cases where the cylindrical epithelium of the cervical canal extends beyond the external os, this would be expected. Carcinoma originating in the cervical canal is the most fatal form of cancer of the uterus, due to the great blood and lymph supply of their parts. Cancer of the body is much less frequent and occurs later in life. Its progress is much slower, and the prognosis after operating on these cases is much more favorable.

CHRONIC SYNOVITIS.

It is obviously inadvisable to open at once the knee joint in every case of chronic synovitis without a trial of less radical measures, for the reason that such cases due to flat foot and similar removable causes are not unknown and are cured by supporting the foot. ROBERT W. LOVETT in the *St. Paul Medical Journal*.

MUSCULAR ATROPHY IN ARTHRITIS.

It is an admitted fact and one proved by animal experimentation, that almost directly after the beginning of inflammation in any joint, wasting of the muscles controlling that joint begins and progresses. Whether this atrophy is wholly due to disuse or is the result of a trophic disturbance secondary to joint inflammation is not yet settled, both opinions being held by competent observers, but whichever it is, more knee joints are disabled by a disregard of this atrophy than by any other one factor.—ROBERT W. LOVETT in the *St. Paul Medical Journal*.

THE VALUE OF VAGINAL FIXATION IN PROCIDENTIA.*

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The object of this paper is not to elicit a discussion on uterine prolapse, but rather to determine whether vaginal fixation as applied to this trouble is or is not a suitable operation to be recommended and adopted; and whether it is less or more efficacious than the multitude of other operations devised and used; and also whether it is less free from the annoying and disagreeable sequelae incident to other operations for this purpose.

In our opinion complete prolapse of the uterus is the most difficult and uncertain of all the pathological conditions of the female pelvis to cure and maintain cured; that is any condition the cure of which may be brought within the scope of reasonable expectation.

It seems to me to be a source of considerable chagrin, that as gynecologists, we are unable to cure, to permanently restore hardly 50 per cent. of all cases; and in view of our failure to make good all along the line it sometimes seems but little wonder that the general surgeon holds us in such derision, claiming gynecology to be superfluous, if not altogether a nonentity.

However, we may not don the garb of mourning nor sit in sackcloth and ashes because he is unappreciative of his obligations to our field, for just so long as there are diseases of women will there be the specialist, and the general surgeon will find himself ever and again indebted to this branch of medicine, from which the cure for the malady in question must and will come, and though deferred we are privileged to hope and labor on. Possibly we have not been altogether faithful to our heritage of not so many decades ago, when Sims and Emmet did their pioneer work in the plastic surgery of the female pelvis. Notably the latter, whose magnificent work, genius and ingenuity may well be the envy and ambition of us all, struggled indefatigably with the thicket of our subject, and taught us many things. Still there is a wide field, the doors are not closed, and there is many an ill of womanhood, it would be fully as magnificent to cure were some one to tell us how. Would it not be

* Read before the Academy of Medicine (Section on Obstetrics and Gynecology), October 22, 1908.

grand if we were able to cure every case of dysmenorrhea, every case of sterility, every case of uterine prolapse. The last being of most concern to us here, in order to be able to draw fair conclusions in regard to the value of any form of treatment, particularly operations, it may be well to make a rather comprehensive survey of the operative work as applied to procidentia in the past thirty years.

There are four fairly distinct methods of treating this trouble, one, the palliative, consisting of pessaries, tampons, etc., which does not concern us here and will be eliminated. The other three operative, but differing in the mode of attack. One by the route of the pelvic floor, attempting to close up the vaginal outlet sufficiently to maintain the prolapsed tissues within the pelvis. Another has for its purpose the shortening of the natural suspenders of the uterus; the round, broad and utero-sacral ligaments or a combination of these. A third disregards largely the normal ligaments and compels the uterus to assume new relationships with the object of forming bands to take the place of the natural ones.

It is a fair statement of fact and not an assumption that each and every one of these will cure *some* cases, but to determine the relative efficiency of any of them we must try to find which one gives the largest percentage of cures, without too serious sequelae of untoward casualties, in subsequent pregnancies, and without interference with normal functions of intestines and the urinary tract.

In regard to those on the pelvic flood: if it were possible and practical to overcome the difficulty by this method Dr. Emmet would have found the way long before he closed the doors of his operating room on his life's work and we would not now have the myriads of perineorrhaphies, etc., devised for this purpose.

He even devised his shelving operation, certainly admirable in conception, and successfully performed by him for a number of years, but it has been tried by others, and found wanting and so relegated, possibly due to the want of his skill in its performance. Since his time Tait, Freund, Hildebrand, Martin and a host of others have devised methods along the same line, but so far as we know not any that may be generally accepted. So that operations on the pelvic floor *per se* are not all that we desire.

Those performed by the shortening or looping of the ligaments deserve some analysis. In theory at least, they are ideal if we can accept the teaching that their function is to suspend the uterus in the

pelvis. Surely they have no other function. In regard to the one usually denominated Alexander-Adams (though the French claim the credit for its discovery to Alquié) so far from condemning it we are quite enthusiastic in its application to certain conditions, but these conditions are defined within rather close limitations. This operation has been in existence over 25 years, the first being performed December 14th, 1881, and while first rather coldly received generally it stands to-day honored with many advocates and if condemned or shelved there is a bare suggestion that it is due to the difficulties in finding the ligaments rather than to any faults with the operation itself. But if used for the purpose of restoring and holding a uterus within the pelvis even in conjunction with the plastic surgery of the pelvic floor it proves too often disappointing for the mechanical reasons of backward displacement and abdominal pressure. Similarly, the work done on the utero-sacral ligaments is very attractive, and in theory if such ligaments existed in any strength, would be very beautiful, for shortening them would throw the uterus into the required anteversion and thus hold it in position; it is quite likely this may be accomplished more often than we are aware, at any rate we believe that the credit and advocacy of this belongs to Dr. Goffe of this city; and if it were possible to always obtain utero-sacral and round ligaments of sufficient tone, by shortening or following each, we probably would not be required to spend sleepless nights in thinking out new devices for prolapse; as it is, nature is not always so profusely generous as to give us this tone, and hence the frequent failures. However, for simple retro-displacement these operations are not to be discarded in suitably selected cases, they are not so provocative of evil after-effects and fairly certain in results.

Next in order are the ventro-suspension or ventro-fixation operations. These seem to have a gradual evolution rather than an inspiration. As abdominal surgery developed it seems a natural sequence that fixing the uterus to the wall of the abdomen should follow. In 1877 Koeberle stitched the pedicle of a tube and ovary to the wall and then followed Lawson Tait in 1880 with actual suturing of the fundus; since then it has certainly been prolific of good and bad, it would be hard to say which most. Its very simplicity is one reason for its prevalent use, any tyro is able by its means to perform a successful laparotomy, and of course the moment he does he is placed among the rank as a full fledged gynecologist, he has won his spurs. It has been advocated and widely published by many men whose

reputation is certainly not mean, notably Howard Kelly, who at the present time has changed his views materially in regard to it. As an operation or even as an adjuvant in procidentia its results are negative, and as a means for rectifying a retrodisplacement it is severely criticised and often condemned by men of widest experience, and it is a question whether as gynecologists we can afford to continue its maintenance and teaching, because so many women find themselves on the operating table subsequently on account of evils due to it.

Then, what can we say of hysterectomy? What is more natural if one sees something dangling between the thighs that does not seem to belong there than to go to work and cut it off. But woe to her who has been the victim, and still has her rectocele or any cystocele, for these it will not cure and she is indeed an invalid. Most emphatically it is to be eschewed.

Lastly that known as Panhystercolpectomy with which the late Dr. Edebohls had much to do and which means the entire ablation of uterus, appendages and vagina, closing together the denuded parts and creating practically a male pelvis. This certainly cures the trouble, but for evident reasons it will be a long day before womankind or even mankind for that matter, will take to this thing kindly.

This brings us to the final question, vaginal fixation. Is it of any value or is it a trouble breeder and should it be condemned forthwith. It certainly can never become as popular as ventro-fixation, for there is too much to it and things are liable to happen even during the operation. In order to have a clearer view of the advantage or disadvantage of any operation, we refer with apologies, for a moment to the old theme of why does prolapse take place anyhow and why is it so difficult of cure; because of the retroversion and of the cystocele; both are not only the accompaniments but the real factors in its causation; without either no procidentia; with either cured, no procidentia. In order to obtain it there must be retroversion and relaxation of the anterior vaginal wall and dropping of the bladder, in one word cystocele, and this is the bugbear of it all, for if there were not a bag of water acting as wedge between the anterior portion of the pelvis and the uterus, with the abdominal pressure at the back of this the problem would not be hard of solution. But here is the African in the fence; the relationship between bladder and uterus has got to be changed, but how? And who is foolhardy enough to dare anything so radical?

However, an operation is of value, all things be-

ing equal, in proportion to the percentage of cures, one giving 50 per cent. or less, is not equal to one giving 80 per cent. or more, and facility should hardly be considered as a factor.

The separation of the bladder was begun by Mackenrodt, Dührssen and Gottschalk. Mackenrodt and Gottschalk claim priority but Dührssen evidently has had the wider experience and when on this continent two years ago he did not stint in time or labor to give instruction in the method. The operation to-day is quite different from that practised in the earlier times when it was performed without opening the peritoneum, which clearly was hazardous. Martin suggested opening it. As it is now an inverted T-shaped incision is made in the anterior vaginal wall extending up to near the urethra. The vesicular ligament is severed and the process of peeling the bladder from the uterus and vagina begun, the lateral angles must be well freed. When the bladder is well out of the way as large an opening as possible is made into the peritoneum. Then there should always be a careful examination made of the pelvic organs, including the appendix, and if anything is found abnormal it should be taken care of. Following this the uterus is drawn forward under the bladder and stitched to the vaginal wall either with or without including the peritoneal flaps. The redundant portions of the vaginal flap must be trimmed off. An amputation of the cervix and a perinorrhaphy should accompany it.

What are the characteristics of this operation? The patients have nothing like as much vesical disturbance as might be expected, convalescence is usually smooth and there should be practically no fatalities. We have seen no vesical fistula, but it is not unlikely to become prevalent as the operation is used, but this would not be fault of the operation.

As to the complications in pregnancy following it, Dührssen says they are not frequent if they occur at all. We know of but one case and her labor was smooth.

As to percentage of cures Dührssen reported as far back as 1892, 114 cases with 102 cures, this being 89.4 per cent.

In connection with Lebanon and Post-Graduate Hospitals, between Dr. Waldo and myself there have been performed about seventy cases; of these Dr. Waldo did forty-six. I believe he has one failure; I have one; but mine was due rather to faulty technic and a bad case; the pregnancy spoken of has a recurrent retroversion but not a prolapse. This one Dührssen himself did. There may be some failure that we have not been able to

trace, this is usually the case, but to my knowledge there are only three. Suppose there are five, that gives us a little over 90 per cent. Even at 85 per cent. there is no operation that will compare in results with vaginal fixation.

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THERAPY OF THE PROSTATE.*

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The diseased prostatic gland has become recognized in recent years not only as a pathologic entity, but further as an important and essential factor to be considered in all subacute and obstinate lesions of the posterior urethra, and in all diseases localized in its immediate vicinity.

Of the many remedies in vogue for the treatment of this organ I propose to discuss some of those which have proved of most value, and indicate different diseases in which they are particularly applicable. Much harm may be done and has been done to patients by using certain methods of treatment under conditions which should forbid their use. Yet the same treatments so condemned would prove of incalculable benefit in properly selected cases.

For acutely inflamed conditions, internal medication is called for, besides the ordinary antipyretics, hot sitz-baths, counter-irritation, etc., and those which seem markedly effectual for the prostate are Hexamethylamin, salol, Benzoic acid and Sodium Benzoate, Salicylate of Sodium, and the Bromides.

Systemic disturbances, and the nervous and mental effects which so frequently are present, should be treated as they occur, and in accordance with the general principles governing such conditions.

For nearly fifteen years massage of the prostate has been practiced; and perhaps no method of treatment has been more abused than this. As a general rule it is wrong to massage when the gland is inflamed; for, as in any other inflamed structure of the body where no infection is present, rest and quiet are requisite, and a minimum of interference. And yet there are some cases where expressing the contents will relieve the prostate of infectious substances, and improvement will result. In such cases, however, only very light, digital manipulations should be used. Massage has abundantly proved a most reliable procedure in the following conditions:

In simple catarrh, where it stirs up a sluggish circulation, which carries off the irritating excess of natural secretions; in subacute non-infectious inflammation of the gland, when by stimulating the bloodvessels, a healthy activity is evoked; in vesiculo-prostatitis, where, of course, the vesicles must be manipulated as well as the gland itself; in urethro-prostatitis, unless there is too great congestion in the prostatic urethra, when massage would be unwise, and generally in infectious inflammation, to dislodge the infection, but, if an abscess has formed, great care should be exercised lest a rectal perforation is produced.

A word in passing as to the manner of performing massage of the prostate may not be amiss.

Anatomically the lower third to half of the prostate is composed of compound tubular glands, the rest being chiefly involuntary muscular tissue; surrounding the gland in great part is a plexus of veins, the plexus of Santorini. A little reflection will show how and why massage produces good results. When infection or clogging of the glands is present, light pressure must be made at the apex and lower third to open the lumina of the ducts, which discharge into the prostatic urethra by twenty to thirty orifices. Then firmer pressure may be made to empty the glands of their contents, taking one side at a time and moving the finger in an arc from side to side, then pressing while sliding it from behind forward in a few successive movements, each of slightly increased force. When congested or inflammatory conditions of the entire gland obtain, pressure should be made over the whole prostatic area, the finger reaching the upper borders, and sweeping the surface of the lobe as just described, noting spots of softening, or nodules of induration for special attention.

It must be remembered, however, that in the plexus of Santorini, the flow of blood tends backward to the internal iliac veins, and manipulations over the plexus are best confined to side to side motions.

The vesicles are really another subject, but it may be stated that in massaging these structures the pressure must be gentle, steady, and directed from above downward.

The application of the faradic and galvanic current has many advocates, and is useful in its stimulating effect on the muscular portion of the gland and in producing absorption of infiltrations. It tends to reduce thus an hypertrophy in its initial stage; but in its lasting results has not proved as valuable a procedure as formerly anticipated.

More recently Bolton reported in the *Lancet* of

* Read at the Semi-Annual Meeting of the Hartford County Medical Association, October 27, 1908.

April 13, 1907, some successful results in reduction of hypertrophy from the application of high-frequency currents, by means of a glass vacuum electrode in the rectum. And Mosckowicz treating the enlargement by *x*-rays noted positive diminution in size with complete relief of urinary symptoms.

In the same line may be mentioned the rectal vibrator, which in some neurasthenics may prove of some advantage; but it is not to be considered where pathological changes have taken place.

Perhaps one of the most valuable methods after massage, because so available in every case, whether rich or poor, in city or country, is the application of hot or cold douches in the rectum. Nearly every case of irritable prostate, whether or not inflammatory in nature, will be benefited by such douches. Plain hot water may be used, or a weak saline solution, and some medication may be added if desirable. By preference they should be used hot, and quite a considerable temperature will be found possible. They should be continued from a quarter to a half hour at a time, and used twice daily in acute cases. Whenever enough fluid to fill the lower end of the rectum surrounding the prostate has entered, this is allowed to escape while the stream continues to flow in gently and slowly. Some cases will be found to do better when cold douches are used, but they are infrequent.

Various instruments for the automatic application of these douches are manufactured, of which Chetwood's is the best example; but the principle is the same in all so far as the final effect is concerned.

The rectal psychrophore for the application of cold to the prostatic region is valuable in hyperemic conditions, and in other subacute inflammatory processes with irritative symptoms. A continuous flow keeps the instrument cold, while in position against the prostate; distension of the rectum with water being thus obviated.

We now pass to a consideration of intra-urethral methods in prostatic therapy.

And as allied to the last mentioned we have the urethral psychrophore. This, in certain cases of chronic and subacute inflammations, affecting particularly the subjacent structures of the prostatic portion of the urethral canal, has given very satisfactory results. It also is used by allowing cold water to circulate through it while retained in position. But where there is a lesion of the deeper tissues it will be found inefficient.

The old-fashioned passing of a steel sound through the posterior urethra, still has a place in

this category—but should never be inserted when any acute inflammation is present. For simple enlargement of the lobes, it will enable one to keep the canal clear from obstruction, when the middle is not the offending lobe; and even when considerable hypertrophy has taken place, the passage of a full sized sound into the bladder every week or two will provide good drainage, through the natural channel; and by combining bladder irrigation at each séance, the danger of septic effects is prevented, and corrected when already present.

In speaking of massage, I referred to a clogging of the glandular orifices in the prostatic sinuses. This occurs to a greater or less degree in a quite considerable number of old infectious cases. One of the best means of overcoming this, is Kollman's modified Oberländer dilator, which by distending the prostatic urethra, mechanically opens up the sinuses. Massage is to be combined with this method for effective results, alternate séances being the rule. The Kollman dilator is helpful also in vascular disturbances in this vicinity; and in inflammatory cases of long standing its use is prophylactic to interstitial and even parenchymatous hypertrophy.

Irrigations.—The name of Ferdinand C. Valentine will always be eminent among the urologists of this country, and his pioneer and persistent championship of irrigation treatment in diseases of the lower urinary tract deserves the praise and unstinted gratitude of the entire nation, but most especially of those surgeons who have put his teachings to daily use. Properly performed irrigations can be replaced by no other therapy which will give as satisfactory improvements in these conditions. When the method is condemned, a certain inference is that it is wrongly applied.

In prostatic troubles it is to be used generally in connection with one of the various measures recounted in this article. But even alone how can it fail of good effect, when 500 to 1000 c.c. of a medicated fluid flow in and out over the diseased prostatic urethra, distending and washing the numerous crypts and folds met with in this region, cleansing away old accumulations of mucus and inflammatory débris, and disinfecting and stimulating the surfaces by the medication and heat of the solution employed. Of various drugs which have served in irrigations, those now most credited include permanganate of potassium, oxycyanate of mercury, silver nitrate, the various albuminates of silver; while others as boric acid, bichloride of mercury, formaldehyde, picric acid, sodium chloride, have their advocates.

Instillations.—The well-known Keyes' syringe has made the deep injection of silver solutions popular for many years. What it lacks in accuracy is made up in simplicity and convenience. The Ulz-man is a good syringe for similar use, but the catheter-à-boule allows more accuracy of location, and especially when stronger solutions are required. Ulcerated and inflamed conditions are benefited by instillations, and stimulation given in catarrhal as well as in functional impairment.

Depositions of ointments upon and about the verumontanum have accomplished results in many cases, when other means were found futile. Several instruments for this purpose are on the market, of which this of Young's is a type, and is perhaps less complicated than some of the others. Ichthyol, carbolic acid, iodoform, etc., according to the condition and infection to be combated may be utilized.

It is all very well to mention ulcers, congestions, inflammations, clogged ducts, etc., but how do we know they are there? In truth we don't, unless we look; for the symptomatology generally speaking is so unique that diagnosis by inference usually obtains. But we can do better.

In the modern urethroscope we have an instrument of precision, both for diagnosis and treatment. And it is the latter feature which calls for a few words. (I cannot here go into the technic of using the instrument, which I have already done in a former paper). An old chronic ulcer, minute in size may frequently be seen in the prostatic sinus, and whatever its origin, its continued presence causes a posterior urethritis and a prostatitis. In its natural situation it lies in a deep fold of mucous membrane and all ordinary applications fail to reach it; or if they do, the mildness of the solution necessarily injected into the general cavity of the urethra is insufficient to heal the ulcer. Now when the urethroscopic tube exposes the offending condition to the eye of the surgeon, he can use the very strongest means at his command, because, first, the extent of the application is limited to the exact spot affected. Second, neutralizing agents are at hand, and can be at once definitely applied to counteract, when sufficient action has occurred. For instance, while in ordinary instillations silver solutions of one or two, up to five per cent. are the strongest used; by the urethroscope, ten, twenty and even fifty per cent. may be applied if desired. Various other preparations as of ichthyol, iodine, copper, boric acid, etc., sometimes as dry powder, are often indicated, *pro re nata*. And the actual cautery can be thus used to remove growths, and to affect granulations in this area.

There remains but the cystoscope to complete our armamentarium. The cystoscope with a ureter catheter attached is introduced into the bladder; the eye notes a severe localized cystitis over the prostatic site, perhaps pyogenic debris, or bullous eruption; such conditions are not infrequent. The bladder is full of a mild or saline solution. The catheter is now directed to the point desired, and the syringe which is attached to its outer end, pushes the silver solution over the inflamed surface, drop by drop, while the surgeon watches its effect. How beautiful to note the blanching and contracting of the fiery swollen area! And what satisfaction, when after two or three such treatments a patient reports himself free from symptoms!

75 PRATT STREET.

REMARKS ON CYSTITIS.*

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I shall not in this brief paper attempt to cover the entire subject of cystitis, nor to discuss completely even any one phase of it, but rather in a few more or less rambling remarks emphasize what appears to me some of the more important points bearing on the practical handling of these cases.

In the first place, let us get clearly in mind what cystitis really is. This might seem unnecessary, but I believe a great many cases are diagnosed as cystitis which are not cystitis at all, and this, too, by men who write considerably on the subject. I have in mind particularly the so-called cases of acute gonorrheal cystitis which are, I believe, in every case acute posterior urethritis when occurring in the male, acute urethritis when occurring in the female.

Personally I doubt whether acute gonorrheal cystitis *per se* ever exists. In a fairly considerable experience with this class of cases I have yet to see my first case. It is a well known fact that gonococci do not thrive on a pavement epithelium such as is found on the most superficial layers of the transitional epithelium lining the bladder. When, however, these are lost as a result of traumatism or the irritating effects of a decomposed urine brought about by the presence of other micro-organisms,

* Read before the Brooklyn Pathological Society, November 12, 1908.

then the gonococcus might find a suitable soil for development. This would, of course, constitute a mixed infection and even these cases are relatively rare.

There is another class of cases often erroneously called cystitis. I refer to those cases of chronic posterior urethritis, non-venereal, non-infectious in character, usually induced by sexual errors. These cases prevent the symptoms of frequency and urgency of urination which might suggest the diagnosis of cystitis, but a more careful history will elicit a long train of other characteristic symptoms; an examination will show a clear urine, endoscopy will reveal a thickened and congested mucous membrane in the posterior urethra with characteristic changes in the colliculus seminalis; cystoscopy will show a perfectly normal bladder mucous membrane, so that cystitis should be easily excluded.

An analogous condition occurs in the female in the cases of acute, subacute and chronic trigonitis often induced by similar causes, occasionally by sudden cold or the irritating effects of extremely acid urine. While anatomically and physiologically the trigone in the female and the deep urethra in the male are really a part of the bladder, yet when discussing the various affections of these structures, I believe it is better to consider them altogether separately. They are each susceptible to a similar type of pathological conditions often due to similar causes presenting a similar train of symptoms and usually amenable to practically the same course of treatment. In the male, instillations of weak solutions of silver nitrate or thallin sulphate are recommended by Keyes, both of which have given good results, or better yet direct applications of the stronger silver salts 3ii-3i to the colliculus through the endoscope; in the female direct application to the trigone through a Kelly endoscope will always achieve very happy results and often a speedy cure. And right here I should like to say, incidentally, that I have had greater success in the treatment of trigonitis in the female by placing the patient in the exaggerated Trendelenburg posture than in the knee-chest position as recommended by Dr. Kelly. For the complete examination of the female bladder I prefer the Nitze cystoscope such as is used in the male subject, inasmuch as I have never been able to get a satisfactory view of the bladder above the trigone through the Kelly tube.

And now, a brief consideration of what I would term true cystitis. The word cystitis implies an inflammation of the bladder mucous membrane with infection and the presence of pathogenic micro-organisms, and they are always present. Those

most frequently found are the colon bacillus, the staphylococcus and streptococcus. They gain entrance to the bladder by way of the urethra from without or less frequently from the prostate or seminal vesicles; by way of the ureters from the kidneys; through the lymphatics; by direct continuity, as in acute or chronic pelvic abscesses, which open into the bladder; and possibly through the blood current itself.

For the purposes of this paper, I would divide cases of cystitis into two groups; those in which the etiological factor has ceased to exist, and which when seen reasonably early, are very amenable to treatment; and secondly, those cases in which the causative element continues to operate and which resist all forms of treatment other than the removal of the case.

A very large number in the first group, I regret to say, may be traced to the doctor or nurse and the introduction of unsterile instruments. This can be prevented, of course, in most cases by care in sterilizing the instruments, the hands, and the parts, supplemented, as I believe it should be in every instance, by irrigation of the bladder with some mildly antiseptic solution such as boracic acid or oxycyanide of mercury, allowing a few ounces to remain in the bladder. Even with these precautions infection will occasionally creep in, for while we can thoroughly sterilize the hands, instruments and lubricant, we can never be quite sure of the skin and mucous membrane adjoining the meatus. Gentleness in the use of instruments is almost, if not quite, as important as asepsis. It is reasonable to believe that a few germs are carried into the bladder every time an instrument is introduced; they usually do no harm and are carried away with the next urination, unless as a result of rough instrumentation there has been a wound of the mucous membrane with its resulting lowered resistance, when they may and often do find a suitable soil for development and cystitis results.

There are quite a few cases which are induced by a combination of cold, voluntary retention of urine, constipation, and an impacted lower bowel. Here the organism, usually the colon bacillus, migrates directly through the lymphatics from the intestine to the bladder. There are other cases which might properly be placed in this group, but these are the two principal types. Many of the cases in group one, will recover promptly on saline purgation, bland diet, rest and urinary antiseptics per os. In the cases of longer standing it will be necessary to supplement bladder irrigations with silver nitrate solutions in strength varying from 1-10,000 to

1-1,000. It will be reasonable to look for a speedy cure from this plan of treatment unless the case has remained neglected so long that thickening and sacculation of the bladder wall has taken place, when it may be necessary to combine with the irrigations, drainage through a perineal tube.

In the second group there are four well marked types; in those cases in which there is an active obstruction to the flow of urine from the bladder; notably tight stricture and prostatic enlargement. The treatment here, of course, is gradual dilation of the stricture and early prostatectomy. If done sufficiently early, a cure may be predicted with reasonable certainty; if neglected until the bladder has become very much contracted, while infection may, perhaps, be removed, a symptomatic cure is obviously impossible.

In those cases in which there is a passive obstruction to the urinary flow, as in paralytic conditions, the prognosis is grave at the best, but much may be done to prevent its occurrence. When it does occur, bladder drainage will often be necessary.

Where foreign bodies, tumors, etc., are found to be the cause of the cystitis they should be removed. The cystitis due to calculus will usually recover upon the removal of the offender with the customary drainage, bearing in mind always that back of the calculus, as a cause of cystitis, there must have been some cause for the calculus which when possible should be removed at the same time. Benign growths are nearly always amenable to surgery.

Malignant growths can sometimes be radically removed with good results, although, unfortunately, their location is often such as to preclude radical treatment and palliation is the best we can hope for.

Tuberculosis is usually an instance of diagnosis too long delayed. It is rarely primary in the bladder. When it does invade the bladder, as it usually does by direct continuity or through the lymphatics, the treatment is, in the main, constitutional, although I have seen one or two cases temporarily improve with bladder irrigations of mercuric chloride 1-10,000, and, in one case, some of the more distressing symptoms relieved by instillations of stronger solutions of the same remedy 1-250.

Those cases which are caused by and perpetuated by an infection higher up in the urinary tract, would require much more time to discuss than the scope of this paper permits. Suffice it to say that in any given case of chronic cystitis where there is no obstruction to the flow of urine, where foreign bodies, tumors and tuberculosis can be excluded and the cystitis persists, an early catheterization of

the ureters with an examination of the separated urines is imperative. In other words, the successful handling of chronic cystitis depends entirely upon a complete diagnosis and, where possible, the removal of the cause.

In conclusion I would like to report in a very brief manner four cases illustrating respectively the four types which I have mentioned above.

CASE I.—C. L. S., male, 40 years old, clerk, came to the Brooklyn Hospital Dispensary June 29th, 1907. Gonorrhea in 1887, lasted eight weeks, thought he was cured. He was apparently well until three years ago. At that time he had what appears to have been an acute exacerbation with no apparent cause. Had trouble since, occasional urethral discharge, difficulty and frequency of urination; gets up three times at night. Several months ago had sounds passed a few times. Is getting worse rapidly.

Examination.—Two glass test; both glasses cloudy and ammoniacal; first glass contains a few short thick shreds; examination of urethra shows hard infiltrate along pendulous portion, stricture in bulb admitting only filiform guide. Cystoscopy at this time was obviously impossible.

Treatment.—Gradual dilatation beginning with small tunnel sound, bladder irrigation with silver nitrate through Gouley catheter at first, later through ordinary silk elastic catheter. There was slow but steady improvement. In February, 1908, there was a slight cloud in urine. Cystoscopy at this time showed a mild diffuse cystitis; the ureters were catheterized and the separate urines were found normal, excluding pyelitis. Sounds and irrigations continued. September, 1908—Urine perfectly clear, patient feels well, gets up once at night. This case presents no special features of interest other than to illustrate the type. The progress was slow, I believe, because of the extensive complicating urethritis.

CASE II.—D. S., aged 33, male, married, salesman, native U. S. Previous history negative. In October, 1907, while in country, he fell from a tree and sustained a fracture of the eleventh dorsal vertebra, followed immediately by complete paralysis of both lower extremities, bladder and rectum. He was placed in a plaster jacket by Dr. Hitzrot, of New York, and removed to the New York Hospital. He made a good recovery with relatively rapid return of power in the extremities. He returned to his home in Brooklyn in December, able to walk fairly well but he was obliged to empty his bowel by enema and his bladder by catheter. On January 3rd, 1908, he had a chill with rise of temperature of 102°, the urine drawn by catheter was turbid and a culture taken from the sediment showed colon bacilli and staphylococcus aureus. He was placed on hexamethyltetramin and bladder irrigations with but slight improvement at first. There were exacerbations and remissions with a general tendency to grow worse, with a constant mild febrile movement, in spite of various forms

of internal medication and different bladder irrigations. The last week in February he complained of slight pain in the right loin. The first two weeks in March he ran an evening temperature from 100° to 104°; he looked and was septic. Cystoscopy March 1st showed intense diffuse cystitis, bladder wall very dark and dull. The ureters were catheterized with the following result: Abundant pus from right kidney, moderate pus from left kidney. Diagnosis, cystitis and double pyelitis. Perineal section with drainage was performed at patient's home on March 5th under nitrous oxide anesthesia. The temperature immediately came down to normal, where it remained; there was rapid improvement in all the symptoms, gain in strength, etc. Examination on May 13th, showed bladder urine very slightly turbid, bladder wall very much improved, urine from left kidney normal, from right kidney very slight trace of pus. One month later the urine was clear and the tube was removed. There was a partial return of bladder and rectal control. At present the patient is perfectly comfortable, he has a slight limp, his urine is clear, he is obliged to wear a urinal because of an occasional dribbling, he does not have to use a catheter and he goes to business every day.

This case is of interest not only to illustrate the type, but also for the prompt improvement in the pyelitis and the general systemic toxemia following simple perineal drainage.

CASE III.—A. B., aged 36, male, native U. S., single. Persistent pyuria for past six years, frequency of urination, especially at night; has had more or less treatment during all this time; for past year bladder washings carefully followed out by a very capable man, with only slight improvement.

Examination.—Urine turbid, faintly acid; pus profuse; culture, colon bacillus; guinea pig inoculation, negative; cystoscopy. General diffuse cystitis, marked thickening and sacculatation of the bladder wall. Ureters catheterized, urine from right side normal, from left side considerable pus and detritus, numerous bacteria. Radiograph shows large calculus in left kidney. Lumbar nephrotomy with drainage of kidney. After six months, there is marked general improvement, gain in weight, etc. There is a very slight turbidity of the urine which I confidently believe will clear up shortly with bladder washings. This case illustrates the importance of investigating the whole urinary tract when a given case of cystitis does not respond to the usual treatment.

CASE IV.—(By courtesy of Dr. John Kepke), J. H., aged 62, German, married, female. Difficult, painful and frequent urination, tenesmus, etc. Three days later, following strained effort at urination there was a large quantity of blood passed per urethram with numerous clots. There was some improvement following rest in bed, etc. There was, however, persistent pain, difficulty, and frequency of urination. In April and in June, 1908, there

was severe hemorrhage from the bladder. Since last hemorrhage the condition has been decidedly worse and progressive. Admitted to Lutheran Hospital, September 1, 1908. Examination under ether same day. Urine turbid, ammoniacal, alkaline, specific gravity 1020, epithelial and pus cells, debris and triple phosphates profuse. Cystoscopy shows a general diffuse cystitis, a slightly movable mass about the size of an English walnut in neighborhood of right ureter. Suprapubic cystotomy by Dr. Kepke immediately following examination showed a pedunculated growth with a sloughing crest at the site before mentioned. This was cut away after applying a curved Keith clamp to the base of the pedicle. The clamp was left *in situ* for forty-eight hours. Examination of the specimen by Dr. Dexter revealed benign papilloma. The patient made a good recovery and at last report was perfectly comfortable and the urine practically clear. While there are no evidences of malignancy, yet simple benign papilloma have a tendency to recur and take on a malignant character with the recurrence, so that the ultimate prognosis of this case must be guarded.

442 GREENE AVENUE.

TREATMENT OF DISEASED CONDITIONS OF THE LOWER BOWEL.

When sigmoidoscopic examination reveals localized areas of acute hyperemia, erosions, superficial ulcers or inflammation about the mucous follicles, these lesions, though improved by local treatment, . . . are most quickly cured by direct applications of such stimulating agents as nitrate of silver, 2 to 10%; ichthyol, 15%, in glycerin; and balsam of Peru, 15%, in castor oil.—J. CHITTENDEN HILL in *The Vermont Medical Monthly*.

CARCINOMA OF THE BREAST.

We must remember that by far the greatest number of breast tumors are malignant; that growing tumors after 30, and especially between the ages of 40 and 50, should be looked upon with suspicion; that pain is not a very early sign of carcinoma; that when a preexisting tumor of long standing takes on a sudden exacerbation of growth it is strongly suspicious of carcinomatous degeneration; that immobility of the tumor with ill-defined borders, favors the diagnosis of malignancy; that, though retraction of the nipple may occur in chronic atrophic mastitis, when such retraction is met, it is strong presumptive evidence of malignancy. On the other hand, the absence of a retracted nipple does not contraindicate the existence of malignancy, as in such cases the tumor will be found at a distance from the nipple.—ADOLPH BONNER in *The Post-Graduate*.

A CASE OF LARYNGEAL STENOSIS IN THE ADULT, SUCCESSFULLY TREATED BY INTUBATION; CONTINUOUS WEARING OF TUBE FOR FOUR YEARS.*

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The patient, a female, married, aged thirty-two, presented herself to me in the early part of March, 1903, to be relieved from wearing a tracheotomy tube which had been inserted some five months previously on account of urgent laryngeal dyspnea. She gave the following history as bearing on the case, dating from the above time:

Family history—negative, habits good. Previous history—measles, mumps and scarlatina in early childhood; diphtheria when eight years old; it was rather a severe case and there is said to have been some trouble with throat at the time; exact nature not known; typhoid fever five years ago, which was complicated by erysipelas (facial); no rheumatism, no renal, cardiac or pulmonary symptoms. The patient is said to have always had more or less trouble with her throat during childhood. At eight years of age (not associated with her diphtheria, she thinks) she had a great deal of difficulty in breathing, and some applications were made to her throat which gave relief. Otherwise well till present; had one miscarriage.

Present illness.—Began about October 1st last, five months ago, as a result of a severe cold, when she had spasmodic attacks of dyspnea and cough with hoarseness, usually coming on at night and lasting variable periods, but usually some hours. These increased in severity until finally she went to Roosevelt Hospital, where tracheotomy was performed. On October 15th, 1902, (two weeks after onset of symptoms), two attempts were made to remove tube, but it had to be reinserted after three hours and one-half hour respectively. After five weeks she went home with the tracheotomy tube in place and has worn it constantly till the present time, March 1, 1903, from which date the following history begins.

She was very desirous of dispensing with the tracheotomy tube, as its constant irritation, causing incessant coughing and excessive secretion, had caused rapid loss of flesh and had reduced her general physical condition to a very low ebb. Examination of her pharynx at this time revealed quite a decided loss of tissue from old ulceration on the right free border of the soft palate extending up toward the uvula. This was a very important point, bearing on the cause of her laryngeal stenosis, as the ulceration was strongly suspicious of being of spe-

cific origin, but careful questioning could not elicit any direct specific history. She was placed, however, on anti-specific treatment at once, hoping it might have an effect upon the laryngeal condition, but she did not bear the iodides well and the treatment was discontinued for a while, but was resumed at various times during the subsequent progress of the case, to be discontinued for the same reason. It is difficult to say just how much the iodide of potassium aided in any improvement of her laryngeal condition.

Examination of her larynx showed it to be practically entirely closed, all the normal landmarks were obliterated; the superior portion, including the arytenoids, being incorporated in a more or less uniform bilateral swelling of a somewhat dense character, leaving a mere slit in the center, through which a fine probe could be passed so as to touch the metal tracheotomy tube below; there was no apparent loss of tissue and practically no motion of the parts. There was a small goitre present, but not sufficient to produce any external pressure.

On March 28th, 1903, under chloroform anesthesia, with the assistance of Dr. John Rogers, of New York, I passed a medium-sized adult hard rubber intubation tube, using considerable force, until the tracheotomy tube was reached, then the tracheotomy tube was withdrawn and the intubation tube continued below the tracheotomy opening. Before intubating, dilatation from below upward was made into the larynx with steel sounds through the tracheal opening.

The intubation tube was retained with comparative comfort for four weeks, when it was expelled and had to be replaced at the end of seven hours owing to rapidly increasing suffocation. The tube was retained this time till May, 1903, when it was coughed out, to be replaced May 24th (one week) on account of severe dyspnea.

June 21st, 1903. Tube was expelled and patient breathed well until June 24th, when it was necessary to replace it again owing to severe attack of difficult breathing. During this interval an opportunity was afforded for examination of the larynx.

There was some motion of arytenoids, especially of the left. The intercordial space was very narrow, the vocal cords, or what appeared to be vocal cords, were irregular in shape with a flabby, fleshy appearance; there was no motion whatever either in phonation or respiration; the right cord was more irregular in outline than the left, as if more pressure had been exerted on it; the color of larynx generally was very red. At the anterior commissure or just below it on the tracheal wall there was a small whitish slough which was forced up in the larynx on expiration, giving a sensation to the patient as if something were loose or flapping and causing her considerable annoyance in coughing and breathing. Various examinations showed but little change in the appearance of the larynx, except that the intercordial space seemed to become a little wider. It was very evident that the intubation tube had exerted considerable pressure absorption.

The patient was very apprehensive and nervous

* Read before the 30th Annual Meeting of the American Laryngological Association, June, 1908.

about being without the tube, which I think might have been a factor in bringing on the suffocative attacks at this time.

The tracheal fistula had been kept open since the beginning, but it was now decided to close it, which was done under chloroform on July 1st, 1903, by Dr. Forbes Hawkes at the Presbyterian Hospital, the edges being excised and brought together by sutures; this is the first instance of which I know of a patient going under a general anesthetic, breathing entirely through an intubation tube; the operation was performed apparently as well as if she had been breathing through a normal larynx.

The operation resulted in a permanent closure of the tracheal wound.

The intubation tube was worn from June 24th, 1903, till May 23rd, 1905, when it was coughed out, but was replaced in a few hours, as the patient did not wish to take any chances in being without it. During this long period the patient was perfectly comfortable as far as her breathing was concerned, and did her ordinary work, and traveled considerable distances throughout the country. Occasionally during attacks of coughing the tube would become partially expelled, but she had learned the art of pushing the tube back in place with her finger and exerting pressure, until the attacks would cease. She could eat and drink with comparative comfort and her general condition became much improved, it being in marked contrast to the period in which she was wearing the tracheotomy tube. She often expressed herself that it would have been impossible for her to have lived under the severe physical strain of the tracheal cannula. She was often asked to have the intubation tube removed, but refused, stating that she was perfectly satisfied with her condition. However, on April 23rd, 1907, as the tube was becoming somewhat foul from secretion, and becoming convinced of the necessity of trying to do without it, she consented to its removal, which was done, and up to the present time, May, 1908, there has been no occasion for its reintroduction.

The condition of the tube was as follows: Some odor, owing to adherent secretion on its superior exposed portion, some small areas of very superficial erosions on external surface, principally on the posterior surface just above the swell, indicating the points of greatest pressure. Internally the tube was coated with fine calcareous deposits evenly disseminated over its entire surface.

Immediate examination of the larynx showed a pretty fair glottic space, larger than at the time of last removal. The mucous membrane was very red in color, but no ulcerations; the motion of the larynx was good, excepting the left side which did not move as well as the right, the immobility seeming to be limited to dense tissue about the left arytenoid; both cordal areas seemed to move well, there was considerable general superficial swelling of the mucous membrane, breathing good, voice aphonic. The patient was somewhat apprehensive as to her ability to breathe without the tube; this wore away as soon as she regained her confidence. The breathing has continued to improve and is normal in character.

She has also gained decidedly in flesh and strength, and considers herself as well as ever. Her voice, though not normal, is variable as to strength and quality; at times being excellent, but becoming hoarse when taking cold, and in damp weather. Examination of larynx at the present time, May, 1908, one year and over since the final removal of the tube, shows the following:

Color, normal, with tendency to paleness.

Motion, somewhat restricted, due mostly to induration about the left crico-arytenoid region, the right side moving with much less restriction.

Right vocal cord is fairly normal in contour, color and motion.

Left vocal cord seems to have been more or less absorbed.

Right arytenoid, slightly enlarged, movable.

Left arytenoid, considerably indurated; the glottic space, though irregular in shape, is most ample in size for breathing purposes and bids fair to remain so unless encroached upon by future inflammations.

The anterior wall of the trachea is quite red in color and shows signs of irregularity in contour at the seat of the original tracheotomy wound.

The goitre seems to have diminished in size during the year.

The dimensions of the intubation tube used were:

Length, from the highest point of the head,	3 inches.
Anterior posterior diameter of head.	$\frac{3}{4}$ inch.
Transverse diameter of head.	$\frac{7}{8}$ "
Anterior posterior diameter of lumen.	$\frac{1}{2}$ "
Transverse diameter of lumen.	$\frac{5}{16}$ "
Outer circumference at neck.	$1\frac{5}{8}$ "
Outer circumference at median swell	$1\frac{6}{8}$ "
Outer circumference at lower extremity	$1\frac{5}{16}$ "

The exact time of the intubating period from the date of the first introduction was four years and twenty-five days, and with the exception of a few days the tube remained in continuously.

The object in presenting this history, other than to record a successful outcome in a case which at first seemed to indicate the wearing of a tracheal cannula or an intubation tube for the remainder of the patient's life, is to emphasize the following points:

1. The tolerance of the larynx to long continued pressure.
2. The superiority of continuous pressure in causing absorption over the older methods of the temporary introduction of dilating instruments.
3. The comparative comfort with which an intubation tube may be indefinitely worn.
4. The improved general condition of the patient while wearing the intubation tube in contrast to the debilitating influence and local annoyance of the tracheotomy cannula.
5. The superiority of the hard rubber over the

metal tube in forming less amount of calcareous deposit, thus lessening the danger of ulceration and formation of exuberant granulation tissue.

952 LEXINGTON AVENUE.

REPORT OF A CASE FROM WHICH 205 GALL STONES WERE REMOVED SIM- ULTANEOUSLY WITH OPERA- TIONS ON CERVIX UTERI AND UTERINE ADNEXA.*

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The barriers between the work of the general surgeon and the gynecologist are broken down and invaded by the one or the other, as certain cases require. A sharp line of differentiation of abdominal surgery between the fields of the general surgeon and the gynecologist no longer exists. The gynecologist of to-day who is unable to cope with conditions involving the appendix, intestine, gall-bladder and kidney has not reached that stage of development which justifies him to rank with his colleagues in this department. On the other hand, the general surgeon who is unable to handle conditions in the female pelvis, with or without associated conditions in the abdominal viscera, would do his patient much better service by leaving the work of pelvic surgery to those who have fitted themselves especially for this field of work.

The gynecologist to-day is no longer the man whose field is limited to work in the vulva, vagina or cervix uteri. His observations within the peritoneal cavity, at first involving the fundus uteri, tubes and ovaries, has spread from the bladder and rectum and its immediate neighborhood to the small intestine, appendix and more distant viscera, and he who undertakes to open the abdomen must be prepared to cope with whatever complications may arise in any individual case. Otherwise, he must not feel disappointed if he is placed below the first rank of his compeers. Indeed, many of our most advanced gynecologists, men of the type of Howard Kelly and Edebohls, have long since felt that gynecology *per se* no longer existed, but really covered the whole field of general surgery. It must, however, be conceded that those men who are willing to devote their lives to the study of diseases peculiar to women must and will be regarded, at least for quite some time to come, as specialists in this particular field. But as specialists these men must be

prepared to go beyond the field of uterus and ovaries just as our predecessors were obliged to widen their field of work beyond the vagina and cervix uteri.

The subject of exploration of the abdominal viscera beyond the pelvic structures at the time of laparotomy, has been gone into by writers like Van der Veer, Howard Kelly and others, so that many operators, as a routine procedure when opening the abdomen for uterine or adnexal disease, make it a rule to explore the appendix, gall-bladder and kidney regions. In my own work I have frequently made this exploration through the abdominal wound and every now and then I have found it desirable through the same incision, or through a second incision, to proceed with an operation apparently foreign to that for which the operation was undertaken. Thus, on certain occasions I have opened the abdomen for a diseased appendix, and, turning the patient on her side, have made the usual lumbar incision for a prolapsed kidney or vice versa. On one occasion, in a case seen with Dr. Flynn, of Jamaica, and also examined by the late Dr. Fowler, of Brooklyn, I made a diagnosis of hepatic colic in the case of a woman in whom the diagnosis of ectopic pregnancy was later made by Dr. Fowler. At the time of operation the diagnosis of ectopic gestation was confirmed and the diseased tube removed. In view of my diagnosis of disease in the gall-bladder, this organ was now explored and surely enough gall stones of large size were discovered. A second operation accordingly was done simultaneously for the removal of the gall stones, the patient eventually making a good recovery. The history of the present case is as follows:

Mrs. V. C., aged 33 years, mother of six children, last born six years ago; has had ten miscarriages or perhaps more. The last two miscarriages respectively at five and two months. The miscarriages caused great distress and dangerous hemorrhages, so that I repaired her lacerated cervix by the Emmet method in order to prevent the repeated miscarriages. After this operation, done seven years ago, she had her last living child, who is now six years old. Apparently the cervix was again torn open at the time of delivery and since then she has had a half dozen more miscarriages at each of which she nearly died from the large quantity of blood lost. During the last few years she has had severe attacks of pain in the abdomen which have been diagnosticated as gall stone colic and for which she has required on numerous occasions hypodermatic injections of morphine. Although advised to have the stones treated by medication until they melted away, she feels that her sufferings are too severe and frequent to submit to any further treatment along this line, and is desirous of being relieved of

* Read before the New York Obstetrical Society, January, 1909.

both conditions, viz., of the repeated abortions and of the gall stones. I promised her not only to repair the diseased and lacerated cervix, but at the same time to do an operation which would render her permanently sterile. As she insisted upon the gall stone operation being done at the same time I promised her to do this too if possible.

At the Post-Graduate Hospital, on June 16th, 1908, patient was placed in the usual lithotomy position and curettage with a Schroeder amputation of the cervix performed. Patient's position was now changed and the usual median laparotomy incision was made and the peritoneal cavity opened.

The left Fallopian tube appeared with a cyst of Morgagni at its fimbriated end, and the little tumor was removed. The tube itself appeared normal but, for the purpose of inducing sterility, I decided to excise one inch of it. The left ovary presented numerous small micro-cysts which were punctured with a needle. The broad ligament presented a varicose appearance. The uterus seemed to be soft and swollen. On the right side the tube and ovary presented the appearance of chronic salpingo-öophoritis, and hence a right salpingo-öophorectomy was done. Passing the hand into the peritoneal cavity, the gall-bladder was explored and found to be distended with gall stones. After the method of Kelly, a second incision was made directly over the hand held in the abdomen as a guide, down to the gall-bladder. The lower abdominal incision was now closed in the usual manner. Placing a sand bag under the back, the gall-bladder was made to approach the abdominal wound, was aspirated and opened, and seized in forceps; two hundred and fifty hard, faceted gall stones were removed. A drainage tube was introduced and fastened with a purse string suture to the abdominal wall after the technic recommended by the Mayos; the hepatic, cystic and common bile ducts had all been carefully explored, previous to opening the gall-bladder, and found to be free from impaction. Patient was now put to bed and, with the intervention of a glass tube and rubber tube passing to a bottle beneath the patient's bed, the gall-bladder was subjected to permanent drainage.

On the day following the operation temperature and pulse were normal, there seemed to be no distention, although patient was vomiting. On the next day, patient passed flatus several times. She was now ordered sulphate of magnesia, in addition to the eserine and calomel which she had been getting, and her stomach was washed out because of constant vomiting. The vaginal packing was also removed. On the 24th of June several wormgut stitches were removed which attached the gall-bladder to the abdominal wall. Owing to a sudden dropping of the bed from the Fowler position in which the patient had been since the time of the operation, a little bloody oozing appeared at the wound, evidently of traumatic character. This gradually subsided in the course of a few days. On the 29th of June, patient was out of bed for a day and the tube had been removed several days previ-

ously. At the end of two weeks patient was discharged cured.

October 20th patient had no more attacks since the operation, having had no disturbance with her pelvic organs and presenting a perfect picture of health and happiness.

112 EAST SIXTY-FIRST STREET.

THROMBOSIS OF THE POPLITEAL AND ANTERIOR AND POSTERIOR TIBIAL ARTERIES COMPLICATING AN APPENDICEAL ABSCESS.

JAS. L. CAMPBELL, M.D.,

Professor Surgical Anatomy and Clinical Surgery, Atlanta School of Medicine; Surgeon to Wesley Memorial Hospital and Tabernacle Infirmary,

ATLANTA, GA.

I have been unable to find the report of any other case of thrombosis of an artery of the extremities complicating appendicitis. It is not infrequently the case that septic emboli are carried to the viscera or we may have endocarditis as one of the complications.

From information secured through the Surgeon-General's office, I can find only two cases of popliteal thrombosis reported in either English or American journals: one an alcoholic case by Dr. Phelps, *New York Medical Journal*, 1896; the other by Mr. McLauren, *Glasgow Medical Journal*, 1901. I was not able to secure this journal, so do not know the details of the case.

That we should have such a complication without evidence of heart or lung is, I feel sure, of sufficient interest to justify me in giving you a detailed report of the case which presented several other points of interest.

Mrs. A. W., aged 26, married six years. Father living, in good health. Mother died eighteen years ago from cancer of the uterus. One brother and four sisters are all living and in good health.

History Previous to Present Illness.—Had usual diseases of childhood; was never strong, but had weighed as much as 125 pounds. For the last few years had not weighed over 100 pounds. When 19 she began to have asthma during the winter months; her menstruation had been irregular; had never been pregnant. About three years ago, she began to have attacks of pain in epigastric and left hypochondriac region. Two years ago, she had pain and tenderness in right iliac region, which was almost constantly present.

In May last, she consulted Dr. J. C. Johnson, who has kindly given me the record of his examination and treatment. Patient complained of bronchial irritation, soreness and burning sensation in left side just above the costal margin, palpi-

tation of heart, slight nausea at times, bowels moved one to three times daily, appetite good, slept well, but was very nervous.

Physical Examination.—Heart and liver normal, lungs normal, except slight pleuritic rub on left side. Slight ptosis of the right kidney. Urine normal. Stomach markedly atonic, greater curvature extending two inches below umbilicus and two inches to right of median line. On testing, two ounces gastric juice mixed with bile was obtained. Ewald's test meal, 6 ounces, free acid 57, total acidity 76, trace of mucus.

She did not take treatment regularly, but improved.

Present Illness.—Menstruation was two days overdue. She was taken suddenly with violent pain in the lower abdomen. She was given two hypodermics of morphine during the night and a cathartic was also given, but there was no relief.



Fig. 1. Showing Condition of the Leg with Lines of Demarcation.

I saw her the next morning with the attending physician. Her pulse was 100-120, temperature 102°, respiration labored, face drawn. She was very nervous. Her abdomen was slightly distended; the muscles rigid, especially on right side, where the tenderness was most marked. The tenderness also extended upward and backward to the costal margin. Her bowels had not moved since the beginning of the attack.

An operation was advised, but she refused not only the operation but would not consent to be moved to the hospital.

Forty-eight hours after the beginning of the attack she consented to come to the Tabernacle Infirmary. The abdomen was in very much the same condition as when first seen; the bowels had moved slightly. The family were still anxious that the treatment should be medical only. She continued to have pain at intervals for thirty or thirty-six hours, when the pulse went up to 132 and the temperature down to normal.

The urine had all along been scanty and turbid, showed a small amount of albumen in a filtered specimen, no sugar, no casts, a large number of disintegrated epithelial cells.

Blood examination showed:

Hemoglobin	80%
White cells.....	26,200
Polymorphonuclear Leucocytes....	72%

Large Lymphocytes	11
Small Lymphocytes	13
Other forms	4

As she was growing steadily worse, she decided to allow us to operate.

Under the anesthetic, we were able to map out a mass extending from McBurney's point upward and backward to the costal margin and a little interval to the outer margin of the right rectus muscle. An incision was made over the center of this mass; the intestines were adhered to the abdominal wall. I pushed my finger outward over the colon into the abscess cavity. It contained about a teacup full of dark, foul-smelling, thin pus. A counter opening was made at the lowest point of the cavity and a cigarette drain placed in both openings.

For thirty hours after the operation she seemed to improve, except that there was no peristalsis, and the abdominal distension was not relieved. About 5 o'clock the following afternoon she developed symptoms of severe shock. The pulse was imperceptible and the heart was heard with some difficulty; the breathing was less interfered with, though there was some trouble. The face was red and finger nails normal in color. This lasted for nearly twelve hours.

The following day she vomited large quantities of dark green and brown fluid. Late in the evening it became offensive, closely resembling fecal matter. As enemas failed to secure any bowel movement, it was decided to make an opening in the colon where it was exposed. The vomiting stopped at once and two or three hours later, a good movement was obtained through this opening. She was improving rapidly, when on the sixth day after the operation the left leg below the knee became slightly numb. This was followed by a tingling sensation which lasted about two hours, then it nearly disappeared. The following night, she had severe pain in the lower part of the popliteal space and down the leg.

The following morning the lower third of the leg and foot was cold and pale. There was complete loss of sensation; the tendon Achilles was rigid and drawn, the upper two-thirds of the leg was livid anteriorly and purple posteriorly. There were two distinct lines of demarcation—one at the juncture of the lower and middle thirds and one at the tubercle of the tibia. The leg between these felt spongy and, particularly where it was purple in color, the epidermis was slipping off. Twenty-four hours later, the lower third was swollen and purple, the lines of demarcation remaining distinct. There was no change of the upper two-thirds. Efforts were made to re-establish the circulation but without result.

Three days after the leg was attacked the right ear became pale and the whole side tingled. This passed off in about an hour and was not complained of again.

The abdominal symptoms were improving, but she was getting septic from the leg and as there was no hope of recovery without an operation, we

amputated the leg about four inches above the knee. The tissues were in fairly good condition, the artery and vein empty. There was very little bleeding. She reacted slightly, but became unconscious and died about ten hours later—seventeen days after the beginning of the attack—thirteen days after the first operation.

Pathological Condition of Leg.—When amputated, it showed three distinct areas of discoloration; the lower third was purple; the upper two-thirds was livid in front and purple behind. The upper line of demarcation was not quite as distinct as the lower. The epidermis was slipping off in several places. On section the tissues had the appearance of half boiled beef and were filled with a bloody colored fluid. The veins were empty. The

function and sensation below the tubercle of the tibia.

6th. The areas of discoloration and lines of demarcation with (a) change of color in the foot and lower third of the leg (b) while the upper third remained the same through the whole attack.

7th. The artery filled with the clot in which the pneumococcus was found while there had been no heart or lung symptoms.

8th. The empty veins.

834 CANDLER BUILDING.

REPORT OF AN ACCIDENT TO AN INFANT SEVENTEEN MONTHS OLD, WITH EXTENSIVE INJURY TO THE ABDOMINAL WALL AND EVISCERATION OF ALL OF THE SMALL INTESTINES; RECOVERY.*

RUFUS B. HALL, M.D.

CINCINNATI, OHIO.

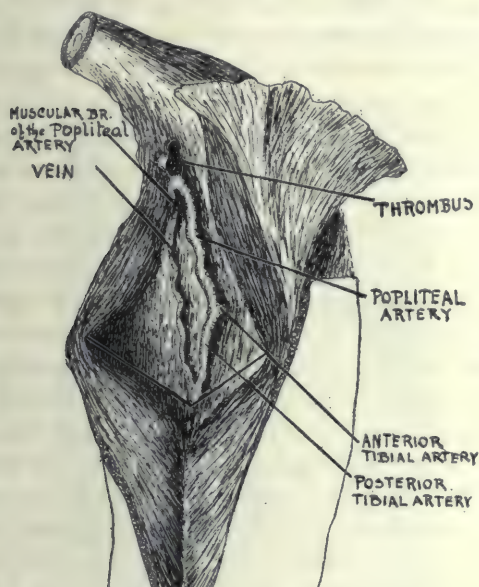


Fig. 2. Showing Location of Thrombus.

artery was hard and filled with a brownish clot from which a smear—an agar was made. The clot extended downward from the lower part of the popliteal artery as far as the arteries were exposed, filling not only the main trunks but the branches as well.

Dr. Thrash found a pure culture of the pneumococcus in the smear made from the clot.

I wish to call your attention briefly to several points in this case:

1st. The improvement for thirty hours after the operation.

2nd. The delayed shock—red color of face and nails during the shock.

3rd. Vomiting which was relieved by opening the colon.

4th. Four days steady improvement.

5th. Six days after the abscess was opened the left leg was attacked. (a) Numbness followed by tingling. (b) Fifteen hours later severe pain, the limb becoming pale and livid with complete loss of

The subject of this report, John D., infant, aged sixteen months and three weeks, is the only child of working people; living in a three-room flat.

On Saturday, September 12, 1908, the mother had devoted the day in canning pears. She had about completed her task at half past five in the evening. The baby, which could walk, had been permitted to eat freely of the ripe fruit, and he had availed himself of the opportunity. He also had the freedom of the room, distributing the peelings promiscuously over the floor in his effort to amuse himself. He was a well developed, vigorous child. At the hour mentioned he had become peevish and tired, and the mother had decided to give him his evening bath. Stripping the child on her lap, she gave him a warm bath, using plenty of soap in doing so. To facilitate the rinsing off of the soap, she stood the child on the drain-board of the kitchen sink and turned water over him. After the mother had rinsed the soap off, she told the child to stand still until she went across the room for a towel. As soon as she left him he fell or jumped off from the sink, which was about two feet and a half high. In falling he struck the right side of his abdomen on the top of an empty half gallon glass, Mason fruit jar. The impact broke the jar, telescoping it, leaving four sharp prongs remaining on the bottom of the can. These sharp points did great damage to the little patient. The child gave one scream and fainted from the injury. When the mother picked

* Read before the Southern Surgical and Gynecological Association, December, 1908.

him up, the intestines were protruding from the wound. She carried him into the front room, calling for help. She was quickly joined by some of her neighbors, and as the intestines were protruding greatly from the wound, and the child bleeding freely, they advised the mother to lay him on the bed, which she did, and over the protruding intestines they laid a towel, and immediately called their family physician. He arrived on the scene in a few minutes. He at once recognized the gravity of the injury, and over the towel there were applied more towels wrung out of warm water. He then sent for me.

I arrived at the home about thirty minutes after the accident. The child was semi-conscious, pulseless, with cold extremities, rapid and superficial breathing. It was bleeding from the large wound in the abdomen. I at once placed a couple of hemostatic forceps at the inner angle of the wound, which controlled the bleeding. The child had lost much blood. Having been told something of the nature of the accident, I had taken with me an emergency grip and the head nurse of my hospital. We at once made an operating room of the kitchen, using the kitchen table for the operating table, and under the one small gas jet which was all the room offered, we hurriedly prepared for our work. Within ten minutes after we entered the house the child was on the table. There was an abundance of hot water on the stove. All of the small intestines, the pyloric end of the stomach, and about four inches of the ascending colon were outside of the abdomen. There were sticking to the coils of bowel and omentum several pieces of peelings of the pears, and one piece of tomato peeling, probably picked up from the floor.

With the assistance of the family physician, who gave the anesthetic, and the nurse, we proceeded to repair the injuries. Using an ordinary hand pitcher, the intestines and omentum were irrigated several times with warm water. There was bleeding from the ragged rent in the omentum, which was ligated. I commenced at the pylorus, passing the small intestine carefully through my fingers as I replaced it through the large rent in the abdominal wall. I looked carefully for injured points in the intestine, expecting to repair them as I came to them. I had reduced about half of the small intestine when I came to a large rent, an inch and a quarter long, in the mesentery. Fortunately, it had not severed a vessel of any great size. This rent was closed with a running suture of catgut. I proceeded rapidly with replacing the intestine, all the while looking for more peelings of the fruit, but

none was found until we had nearly completed the replacement of the small intestine, when quite a large piece of peeling was found sticking to the mesentery. There were several scratches on the surface of the small intestine through the peritoneal covering, but not of sufficient depth to require suture. A remarkable condition was present: the small intestines throughout were so full, they felt like ordinary sausages. The caput coli was the last part of bowel replaced.

The wound in the side of the abdomen, shown very plainly in the photograph here presented, and which I shall describe later, was closed with through-and-through silkworm-gut suture, and my attention was given to the wound over the tenth rib, which I found had cut across the rib, and there was bleeding from the intercostal artery. This was ligated and the wound closed with suture. There was a ragged wound one inch in front of this going through the abdominal wall. The ragged wound about an inch behind the large wound in the abdomen did not enter the abdominal cavity. As will be seen the large wound was X-shaped. It commenced at the anterior superior spine of the ilium on the right side, and extended a little forward and upward for two inches, then downward and forward for an inch and three-quarters. The latter half of this wound, while it is only an inch and three-quarters on the skin surface, dipped forward in the muscles for fully an inch, being broader on the inside than on the outside. The wound cut across the deep epigastric artery. This was the vessel from which the child lost so much blood, and which was clamped with a hemostat when I first reached the bedside.

The operation and the dressing did not consume more than fifteen minutes. When the child was placed in bed the breathing was more regular, and fuller, but there was no sign of a radial pulse, and the shock was profound. I had little hope at the time that the child would rally from the shock, owing to the great loss of blood, but after a few hours, with the aid of the usual remedies, warmth returned to the extremities and a feeble and very rapid pulse could be felt at the wrist. He had a restless night and we were compelled to use an anodyne to quiet him. At ten o'clock the rectal temperature had reached 99°. It rapidly rose, and at midnight it was 103°, and the abdomen was distended with gas. Knowing that the child had eaten freely of the fruit during the day, it was ordered 1-20 of a grain of calomel every half hour, with a teaspoonful of water. An enema was given, which emptied the lower bowel. The temperature rapidly rose, and at six o'clock in the morning it was 106.5°

per rectum. There were then general twitching of the muscles throughout the body. The child was delirious. The abdomen was enormously distended with gas. An ice-cap had been ordered at midnight. Cold sponge baths were administered, which reduced the temperature in thirty minutes to 103° , but it rapidly rose again within an hour and a half to 106.6° . The general condition of the patient grew worse until noon Sunday, at which time we succeeded by an enema in getting a good stool, with a great quantity of undigested pears. Within an hour or so the child passed about a pint and a half of undigested pears. At the same time he passed great quantities of gas and the abdominal distention entirely disappeared. Within two hours the temperature dropped to 100° , and all the symptoms were greatly improved and the outlook seemed very



much more favorable. The delirium disappeared as soon as the temperature dropped, and it did not return. Afterwards there was no unusual distention of the abdomen with gas. The child was fed and nursed carefully for two weeks. Part of the stitches were removed on the tenth day and the remaining stitches were removed on the twelfth day. The wound united throughout without a drop of pus.

Sunday evening, twenty-four hours after the accident, the child commenced to cough, and soon developed a bronchitis. This cough annoyed him more than anything else after that time. It caused much pain in the abdomen, and we were compelled to give codeine to control it. The temperature ranged from 99° to 101° for one week, at which time the cough entirely subsided and the tempera-

ture dropped to normal, and for the next week fluctuated from normal to 99.5° . At the end of three weeks the child was permitted to be taken out for an airing. He improved rapidly after that time, and has grown steadily, as a normal child should. The photograph was made on December 3d. The mother says the child has gained several pounds in flesh, and has not been sick a minute since he recovered from the accident.

I report the case because the accident is one of such an unusual character, accompanied with a great loss of blood, and in such a small infant. The rapid recovery is another demonstration of the fact that it does not matter much where the surgery is performed, if one can secure cleanliness in and about the wound. One could hardly imagine conditions more unfavorable for aseptic surgery than obtained in this instance, yet the outcome was satisfactory. The fact that the intestinal tract was so full of undigested fruit complicated the recovery very markedly. It was this that made us anxious to empty the intestines as soon as possible after the accident.

The case illustrates in a marked degree the great benefit to be derived by thoroughly emptying the intestinal canal. For several hours on Sunday forenoon before the intestinal tract was cleared the condition of the patient was *in extremis*. Within an hour after the first movement was obtained the picture was entirely changed and within two hours after the first movement convalescence was established.

"RAILWAY SPINE."

The symptoms of hysteria of traumatic origin differ little from those produced by other causes, save those referable directly to the location of the injury. The absence of spasm, paralysis, hyperesthesia, paresthesia, or anesthesia at a distance from the site of the injury, excludes a meningomyelitis. If a pain that has lasted six months is not increased by downward pressure on the head or shoulders, and there is movability of the vertebra with no angular displacement, caries of the vertebral bones can be excluded.—C. R. DUDLEY in the *Journal of the Missouri State Medical Association*.

Dr. Wm. F. Waugh, 1424 E. Ravenswood Park, Chicago, is collecting material for a paper on atropine as a hemostatic. He will appreciate the receipt of reports—adverse or favorable—from those who have had experience with this use of the drug.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, APRIL, 1909.

MODIFICATIONS IN INGUINAL HERNIOTOMY.

Two procedures are integral parts of the familiar inguinal herniotomy of Bassini,—a muscle plastic, and transplantation of the cord. The first of these, the plastic, is in its essential features the basis of all subsequently devised operations, excepting Kocher's. The second, dislocation of the cord, was believed to be important to the cure by providing a more secure closure of the canal. In Halsted's earlier operation, indeed, the cord was transplanted beyond the internal ring, through an incision in the internal oblique. In direct hernia, a form much less common than the text-books would indicate, the displacement of the cord bed is a logical procedure. In indirect hernia, however, it has ceased to be regarded, by very many surgeons at least, as a necessary step. In the later operation of Halsted it is omitted and, indeed, the cord itself is handled as little as possible, although some of its veins are excised. The importance of disturbing the cord structures as little as possible is recognized in the most modern procedures. To carry this principle still further, Albert E. Sellenings, in the last issue of the AMERICAN JOURNAL OF SURGERY described an operation in which neither the cord nor the sac relations were disturbed. Without dissecting out the sac, it is simply split and, after returning its contents, it is tied off high with a purse-string suture, then closed throughout its length by a sort of intra-

saccular suture much as in the manner of Matas' aneurismorrhaphy. Our attention has been called to the fact that this procedure (with somewhat different technic) was described two years ago by Harvey P. Jack, of Canisteo, N. Y., and to him belongs priority. To the extent that saving of time or of manipulation is important, as in old and feeble subjects it usually is, this step in inguinal herniotomy has much to commend it.

The high percentage of cures generally attributed to radical inguinal herniotomy is hardly to be accepted. That patients with relapses do not always return to the same surgeon for the accurate adjustment of his statistics is a familiar fact. And these recurrences are by no means infrequently in those young, muscular subjects with small ruptures, in whom one has a right to enjoy the greatest assurance of a cure. Perhaps the shortening of the period of confinement after operation is partly responsible for recurrences. More likely still is the performance of a routine operation which does not sufficiently attend to small but vital details of technic or to peculiarities of the individual case.

We have previously pointed out the importance of totally ablating all semblance of sac, and potential sac, not merely by tying or sewing it "at the neck" but by closing off the peritoneum at or even further back than its reflection. That no redundancy of peritoneum is left can be best assured by exposing the peritoneum not only externally by a free division of the external oblique, but also internally at least as far as the epigastric vessels. In the operation graphically described by F. Gregory Connell in *Surgery, Gynecology and Obstetrics*, October, 1908, the importance of the high ablation of the sac is emphasized in his "Step 3. Removal of the sac with redundant parietal peritoneum at the internal ring. Closure of the peritoneum as in usual abdominal incision. (Doing away with any outward bulging of the peritoneum . . . thus avoiding a potential recurrence.)" Kocher is not alone in believing that the complete obliteration of the sac is the essential part of the cure; and this is the only important step of an operation which has seemed to yield him gratifying results.

The closure of as much as possible of the transversalis fascia is, also, we believe, important to success. This, too, has not been overlooked by careful observers. The fascia is not difficult to isolate, nor, as a rule, to approximate. In the *N. Y. Medical Journal*, March 13, 1909, C. F. Kivlin describes overlapping closure of the transversalis fascia about the cord as an addition to the technic of other op-

erations. Substantially the same step is, however, a part of the operation adopted by Connell and referred to above. Nor should it be forgotten that closure of the transversalis fascia by a separate layer of sutures is a feature of the Ferguson operation which he emphasized only less than attention to the outer angle of the muscles. In Andrews' imbricating operation the transversalis fascia is included in the through and through suture. Fowler carried the effort to close the transversalis still further. He incised this structure and the peritoneum from the internal to the external ring (tying and cutting the epigastric vessels), dislocated the cord inward, and then sutured the divided tissues.

The Bassini, Halsted or Andrews plastics are all insufficient as radical operations without careful attention to other details, and these become of still greater importance in cases where, by reason of insufficient musculature, the plastic must needs be unsatisfactory. Here, to be sure, the employment of the rectus sheath (Halsted), or of the rectus itself (Bloodgood) may help to "piece out," and wire filigree may form some support. But in spite of these devices there are many subjects, old or more or less emaciated, and unsuited for trusses, who can have no probability of cure unless each contributing factor is dealt with carefully.

We cannot leave this subject without a protest against the practice of removing *healthy* omentum guilty of no other offense than being found in a hernial sac. Aside from the risk of internal hemorrhage from the slipping of a ligature, the ruthless amputation of healthy omentum deprives its owner of a useful structure without giving him a compensatory added insurance against relapse of his rupture.—W. M. B.

THE MANAGEMENT OF PLACENTA PREVIA.

The treatment of placenta previa is at present evoking an acrimonious dispute in German obstetrical circles. Kroenig and Sellheim have raised a veritable storm by their radical attitude in favor of Cesarean section in this condition. Each of them reports a small series of cases with no mortality, maternal or fetal; but, as is well known, statistics are always deceptive, and no conclusions can be drawn except from large numbers of cases. A. Martin justly insists that the attitude of those who would divide obstetrics into two classes—that of everyday practice and that of the hospital—is unjustifiable and the division is artificial; and the coming generation of physicians should be taught methods which they can and must use at the bed-

side, not those that can be attempted only in the best hospital surroundings. The first suggestions and reports of Cesarean section for placenta previa came from American surgeons, but the great majority of the profession on this side of the Atlantic has not endorsed nor attempted to follow such radical measures.

The conservative treatment of placenta previa centers in an early and correct diagnosis. If the hemorrhage occurs in the sixth or seventh month of pregnancy, the child is a negligible factor; in the later months the mother's life is still paramount, but more consideration should be given to the fetus when near term, than when premature and almost sure to succumb. The greatest harm is usually done by ill-prepared or incompetent efforts at packing the vagina with non-aseptic cotton or gauze, which hides the hemorrhage, but fails to control it. Then, after the anemia has become extreme, and infection is present or threatens, assistance is called in too late.

The outfit of every accoucheur should contain inelastic dilating bags for introduction, if possible, through the placenta, if centrally implanted, at least within the membranes if the implantation is lateral; and when this is impossible the bag should be placed below the placenta, between it and the presenting head. After the spontaneous expulsion of a large bag (holding 500 c.cm.), to which may be attached a weight of two pounds, version and extraction through the now fully dilated cervix should give a low lateral and fetal mortality. In partial (lateral) placenta previa, where the bleeding appears late, after the cervix is nearly obliterated, rupture of the membranes may suffice to control the hemorrhage.

In the January number of the AMERICAN JOURNAL OF SURGERY, Dr. Harold A. Miller, of Pittsburgh, described a procedure which, if justified by further experience, will deserve extended recognition. He ties uterine arteries submucously through the vaginal fornices, and finds that the bleeding is promptly controlled. This operation is slight, non-mutilating, and, *if the ureters are not included in the ligature*, devoid of danger. After the hemorrhage has been controlled deliberate efforts to extract the child may then be undertaken.

No matter what further advances will be made in the methods of coping with this frequent and alarming complication of pregnancy, a material reduction of its dangers and fatalities will depend more upon the proper training of the general practitioner along conservative lines, than upon any one operative procedure, which demands for its execution modern hospital equipment and surroundings.—R. T. F.

Surgical Suggestions

The cause of an obscure symptomless fever may be a pyelitis. Urinary examination will establish the diagnosis.

Swabbing the throat with 20 per cent. iodine in glycerine will quickly relieve a pharyngitis.

Small reddish spots interspersed over the tonsils, uvula and anterior pillars, with no signs of inflammation, are usually herpetic.

The effects of the application of cocaine or adrenalin to the nose or throat may be prolonged by swabbing the parts after the application of the medicament with sterile vaselin.

It is almost impossible to successfully anesthetize a peritonsillar abscess. The patient should be placed under the lightest possible narcosis and the incision made rapidly while the head is suspended over the edge of the table.

Book Reviews.

A Text-Book of General Bacteriology. By EDWIN O. JORDAN, Ph.D., Professor of Bacteriology in the University of Chicago and in the Rush Medical College. Octavo; 557 pages; illustrated. Philadelphia and London: W. B. SAUNDERS COMPANY, 1908.

We recall few text-books of bacteriology that are more interestingly written than the volume before us. It is very evident that the author is in close sympathy with the utilitarian significance of bacteriology, for the largest emphasis is placed on those phases of the subject. Thus the relations of bacteria to disease are extensively dwelt upon, while their relations to sanitation, industry, agriculture, etc., are not omitted. At the same time the technical and cultural features are sufficiently outlined to serve as a good working guide for the beginner. Especially commendable is the author's clear style. As an instance of this, the chapter on immunity, a proverbially difficult subject, is written so as to lead one to believe the subject to be remarkably simple. Considerable interest is added to the text by the numerous historical references scattered through it. The work is interspersed with references to the literature, and these serve to show that the author is well acquainted with the important bacteriologic work of recent years. His criticism of debatable bacteriologic subjects is sane and unerring and withal remarkably concise. The illustrations are all that can be desired.

Altogether the book reveals evidences of high pedagogic skill, and can be cordially recommended.

Text-Book of Gynecological Diagnosis. By DR. GEORG WINTER, O.O., Professor and Director of the Kgl. Universitäts-Frauenklinik in Königsberg. With the collaboration of DR. CARL RUGE, of Berlin. Edited by JOHN G. CLARK, M.D., Professor of Gynecology, University of Pennsylvania. *After the third revised German edition.* Large octavo; 670 pages; illustrated by

four full-page plates and three hundred and forty-six text illustrations in black and colors. Philadelphia and London: J. B. LIPPINCOTT COMPANY, 1909. Price, \$6.00.

The English-speaking medical profession is to be congratulated that the smooth and accurate translation, by Dr. R. Max Goepf, of Winter's *Diagnosis*, at last enables it to read this standard treatise. The book differs from all others in that it takes up each subject not only from the theoretical but also from the practical aspect, placing before the reader the difficulties which confront him, the examination and the method of inductive or deductive reasoning needed to clear up the diagnosis. Ruge discusses the microscopical diagnosis in a masterly manner, making it dovetail accurately with the discussion of bedside findings. The illustrations, which are excellent throughout, are supplemented by diagrammatic sketches, drawn to scale, which not only enable the reader to grasp the salient features of each disease at a glance, but also train him to use similar schemata to record his own cases.

Introductory chapters initiate the reader into the mysteries of all the various methods of examination, including bacteriological, cystoscopic, radiographic and microscopical. The normal findings, which form the ground-work of all successful diagnosis are discussed, Ruge then taking up the histology of the generative organs. Classical chapters on normal and disturbed pregnancies follow. Displacements of the uterus receive extended analysis. The chapter dealing with myomata is unexcelled. The section on ovarian tumors gives especial scope to a brilliant discussion on differential diagnosis. Malignant disease of the uterus, a subject of particular interest to Winter who has taken the lead in educating the lay public to its insidious onset, is especially emphasized. Next are treated the neoplasms of the vulva and vagina. The diagnosis of tubal disease of pelvic peritonitis and of parametritis, although separately treated, emphasize the intimate relations of these inflammatory diseases. Uterine catarrh follows; the concluding chapters of the main portion dealing with malformations and diseases of the urinary apparatus. A special discussion, from an analytical standpoint, deals with the causes of hemorrhage, amenorrhea, dysmenorrhea, sterility and abdominal tumors.

This short résumé cannot give more than a hint of the wealth of experience and material which has been incorporated in this volume. The drawings of microscopical sections are excellent, the book combining the functions of diagnosis as it is really met, and as it should be practiced.

Eine neue Hypothese über Ursachen und Wesen bösartiger Geschwulste. DR. PHIL. ET MED. OTTO AICHELE, a.o. Professor der Gynäkologie an der Universität Santiago (Chili). Pamphlet; 36 pages. Munich: J. F. LEHMANN, 1908.

In a nutshell, the author's theory is that the normal somatic cell by amphimixis (conjugation such as occurs between the ovum and spermatozoon) with a leucocyte furnishes the malignant cell (carcinoma or sarcoma). From this cell, by division the malignant tumor arises. This short monograph gives a good résumé of all the work done on malignant tumors, besides offering the above hypothesis.

Nouveau Traité de Chirurgie. Publié sous la direction de PIERRE DELBET et A. LE DENTU. Fascicule XIII. MALADIES DU CRANE ET DE L'ENCÉPHALE par M. AUVRAY. Professeur Agrégé à la Faculté de Médecine de Paris, Chirurgien des Hôpitaux. Octavo; 508 pages; 130 illustrations. Paris: J. B. BAILLIÈRE ET FILS, 1909.

This volume of the series, on the whole, is thoroughly satisfactory. It might have been wise to devote more space to the detailed description of cranial topography, although this subject may be studied in other books. The main headings are as follows: Traumatic lesions of the skull; their complications; tumors of the skull; infectious lesions; complications of middle ear affections; congenital disease of the skull and brain; and various cerebral diseases (such as epilepsy, hemorrhages, encephalitis, etc.).

The book is thoroughly up to date and quite complete. Of the various methods of raising a flap the author gives

preference to the trephine and Gigli saw. He favors Cushing's views as to active intervention in certain cases of fracture at the base. In the new-born, birth injuries should more often be operatively treated. In cerebral tumor, lumbar puncture is warned against, as sudden death is not uncommon, after this interference.

Tabellen zu Klinisch-bakteriologischen Untersuchungen für Chirurgen und Gynakologen. By DR. W. LIEPMANN, Dozent at the University of Berlin, Senior Surgeon at the Gynecological Division of the Charité. Large octavo. Berlin: AUGUST HIRSCHWALD, 1909. Price, 2 Marks.

This little volume is designed as a record of operations in connection with the "Dreitupfer probe" (the three sponge test). The object of the test is to afford a control of the aseptis as carried out at the operation; to note the infective germs contained in the growths removed, and to enable an early and more definite prognosis based upon these facts. During the operation a dry, sterile gauze sponge is rubbed about in the wound as soon as the peritoneal cavity is opened, in suspicious connective tissue another test is made and finally before closure of the wound a third test is obtained. The sponges are at once placed in dry Petri dishes and later transferred to bouillon. Next day the cultures are examined and stained. The application of the method is then discussed. The main part of the booklet is composed of 150 blank temperature charts and space for records.

Principles and Practice of Physical Diagnosis. By JOHN C. DA COSTA, JR., M.D., Associate in Clinical Medicine, Jefferson Medical College; Chief of Medical Clinic and Assistant Visiting Physician, Jefferson Hospital, etc. Octavo; 548 pages; 212 original illustrations. Philadelphia and London: W. B. SAUNDERS COMPANY, 1908.

While this book introduces no novel features, it is nevertheless a work of solid merit. The arrangement and exposition are systematic; the text, within the limitations set forth by the author, is complete and up-to-date; the author's judgment is sound and his style is clear and free from redundancy. Especially pleasing to note is the author's sound knowledge of pathology. The introduction of differential diagnosis also adds appreciably to the value of the book.

Despite these merits, the work has defects; these are, however, errors of omission rather than commission. While we fully appreciate that the author cannot cover the entire subject of physical diagnosis within the compass of a volume of this size, nevertheless it appears to us that certain subjects of fundamental importance should not have been omitted. Thus we find no discussion of "fever," of the examination of the tongue, rectal examination, sigmoidoscopy or of "Head Zones." Of subjects of minor importance, we fail to note any mention of the value of the abdominal examination in a warm bath. The whole exposition of the subject of "abdominal examination" appears to us to have been neglected at the expense of thoracic diagnosis.

The illustrations are all original and entirely satisfactory, although we fail to see why so many nude female figures should have been chosen to represent physical signs instead of the conventional male types.

On the whole the book represents an achievement and with the correction of the omissions mentioned above, it should take a place of the first rank among works devoted to this subject.

Borderland Studies. A Collection of Essays on Medical and Related Topics. By GEORGE M. GOULD, M.D., Philadelphia. Volume II. Duodecimo; 311 pages. Philadelphia: P. BLAKISTON SON & Co., 1908.

A glance over the titles of the essays contained in this book gives evidence that the author has lost none of his well-known versatility. In the first essay, "The History of the House," he outlines in a highly instructive and interesting manner the development of the modern dwelling in its hygienic aspects. In "The Life Study of Patients," the author agitates again the subject of "Eye Strain." "The

Seven Deadly Sins," described in the next essay, are tobacco, alcohol, tea, coffee, sugar, venereal diseases, the modern house and eye strain. In the essay on "Sin and Disease," the immense price that humanity pays through the scourges of venereal diseases is set forth luminously in an array of startling figures. "King Arthur's Medicine" is a diagnostic study of the diseases with which the various heroes in Malory's renowned life were afflicted. Needless to say they are largely traumatic. His essay on "Style" can be read with profit by all writers on medical subjects. Among the other essays comprised in this volume may be mentioned, "A System of Personal Biologic Examination," "Some Intellectual Weeds of American Growth," "History and Psychology of Words," "Child Fetiches" and "Vocation and Avocation."

While the reader perhaps may differ with the author in many things, all must concede that his views are never hackneyed and that he is a master in the art of setting them forth. The reader should therefore find these essays as suggestive as they are interesting.

Bacterial Food Poisoning. A concise exposition of the etiology, bacteriology, pathology, symptomatology, prophylaxis, and treatment of so-called ptomaine poisoning. By PROF. DR. A. DIEUDONNÉ, Munich. Translated and edited, with additions, by DR. CHARLES FREDERICK BOLDUAN, Bacteriologist, Research Laboratory, Department of Health, City of New York. Authorized translation, Duodecimo; 128 pages. New York: E. B. TREAT & Co., 1909.

This book will tend to dissipate many of the current hazy notions in regard to "ptomaine" poisoning. Instead of being due to noxious chemical substances, as was so long supposed, the author shows that specific forms of bacteria are, in most instances, associated with the various types of food poisoning. The author discusses in separate chapters: Poisoning Due to Diseased Meat; to Decayed Meat; to the Eating of Sausages; Cheese; Ice Cream and Puddings; Potatoes; Canned Goods and Metallic Poisoning. The least satisfactory discussion is that on Treatment, which is merely outlined in a summary fashion. The work concludes with a good bibliography.

Altogether, the book is a veritable mine of information on a subject the importance of which is not sufficiently appreciated.

Books Received

Surgical Diseases of the Abdomen, with especial reference to Diagnosis. By RICHARD DOUGLAS, M.D., Formerly Professor of Gynecology and Abdominal Surgery, Medical Department, Vanderbilt University, Nashville; Ex-President of the Southern Surgical and Gynecological Association, etc. *Second Edition*, revised and enlarged. Edited by RICHARD A. BARR, B.A., Professor of Abdominal Surgery, Medical Department, Vanderbilt University. Octavo; 897 pages; 20 full-page plates. Philadelphia: P. BLAKISTON'S SON & COMPANY, 1909. Price, \$6.00.

Surgical Diseases of Children. A Modern Treatise on Pediatric Surgery. By SAMUEL W. KELLEY, M.D., Professor of Diseases of Children, Cleveland College of Physicians and Surgeons, Medical Department, Ohio Wesleyan University; Surgeon-in-Chief, Holy Cross Home for Crippled Children; Pediatricist, St. Luke's Hospital and City Hospital, etc. Large octavo; 765 pages; 293 illustrations. New York: E. B. TREAT & COMPANY, 1909. Price, \$5.00.

Practical Dietetics, with Reference to Diet in Disease. By ALIDA FRANCES PATTEE, late Instructor in Dietetics, Bellevue Training School for Nurses, Bellevue Hospital; Special Lecturer at Bellevue, Mount Sinai, Hahnemann, and the Flower Hospital Training School for Nurses, New York City, etc. *Fifth Edition*. Duodecimo; 300 pages. Mount Vernon, N. Y., and New York City: Published by the author. Price, \$1.00.

Progress in Surgery.

A Résumé of Recent Literature.

Temporary Colostomy as a Curative Measure in Certain Forms of Post-Operative Fecal Fistulae. J. M. ELDER, Montreal. *Surgery, Gynecology & Obstetrics*, January, 1909.

Elder reports four cases of fecal fistulae, two vaginal and two abdominal, which occurred after operations on the pelvic organs, cured by simple temporary exclusion of the gut by means of a colostomy opening, central to the fistulous tract. It is essential to determine from what part of the colon or rectum the fistula originates. If low down this may be determined with the proctoscope; if higher up injection of bismuth paste and a skiagraph will have to be used. The technic of the colostomy is a simple Maydl operation in two stages, preferably employing McBurney's inter-muscular incision. The fistula receives no treatment and in all the cases reported healing took place within a few weeks to months. Later the colostomy opening is closed by the usual extraperitoneal suture and closure of the wound.

Abdominal Surgery Without Detached Pads or Sponges. H. S. CROSSEN, St. Louis. *American Journal of Obstetrics*. January, 1909.

Crossen claims that his method, if carried out as directed, will absolutely safeguard against the serious accident of a sponge or pad being left behind during an operation. The set used during a laparotomy consists of four strips of gauze 10 yards long and 3 inches wide (6 thicknesses) to be used for sponging, and one wide strip 5 yards long and 9 inches wide (4 thicknesses). Each strip lies folded within a small bag to which the one end of the strip is firmly stitched. At the beginning of the operation a bag with the narrow strip is pinned to the laparotomy sheet near the wound, and the larger bag next to this. As required for sponging, more and more of the narrow strip is pulled out and not cut away but simply allowed to hang down from the opposite side when soaked with blood. The larger strip is used instead of pads.

A Summation of Data in Regard to the Appendicular Artery in Sixty-five Personal Dissections. BYRON ROBINSON, Chicago. *Denver Medical Times and Utah Medical Journal*, January, 1909.

The arteria appendicularis, primarily, and in the majority of subjects originates directly from the right circumference of the ileocolic circle; in the minority of subjects it originates directly from the ileocolic arches. It originates from the ramus colicus (of the ileocolic artery) in 3 per cent. of subjects. The maximum number of appendicular arteries in sixty-five consecutive subjects was five, the minimum one. The average number was two. In general it courses from the right border of the ileocolic circle or from the ileocolic arches distalward between the right mesocolic blades, dorsal to the distal ileum and terminates by coursing between the blades of the mesoappendix to the free end on the appendix. The course of the principal appendicular artery determines the form of the mesoappendix. The length of the artery varies from two to seven inches, the diameter is markedly limited, frequently thread-like. Clinically the appendicular artery is significant as it nourishes the dangerous and treacherous atrophic appendix—dangerous because perityphlitis kills, and treacherous because the capricious course of perityphlitis cannot be prognosed. The general etiology of perityphlitis is trauma of the psoas muscle producing adhesions which contracts the mesoappendix, constricts the vessels, flexes the appendix, checking drainage and ending in perforation.

Gallstones in the Urinary Bladder (*Gallensteine in der Harnblase*). F. MICHEL, Koblenz. *Zentralblatt für Gynäkologie*, January 2, 1909.

The author reports a very rare case. The patient, a 27-year-old woman, three years previously had severe gallstone colics followed by the signs of peritonitis. Later a

large exudate developed in the right iliac fossa, which was supposedly due to an appendicular inflammation. Repeated attacks of anuria and dysuria were noted. About six months ago severe cystitis, very resistant to treatment, appeared, and a calculus was suspected. Michel was called in to operate upon the patient, and through a vesico-vaginal incision removed four large stones, which fitted together on their faceted surfaces, forming a sausage-shaped mass. The bladder wound healed. The stones contained cholesterin and bile salts. Since the operation the urine continues to show bile and is oily, proving that communication with the bile passages still persists. Cystoscopy was refused.

Simultaneous Ligation of Both External Iliac Arteries for Secondary Hemorrhage Following Bilateral Uretero-Lithotomy. A. V. MOSCHCOWITZ, New York. *Annals of Surgery*, December, 1908.

The main features of this highly interesting case are the following: The patient underwent the operation of bilateral uretero-lithotomy for two calculi in each ureter. The operation was easily done and for drainage the author used soft rubber tubes which led down to the ureteral opening. Convalescence was uneventful up to the first dressing, which took place 7 days after operation. On removal of the right tube there ensued a tremendous gush of blood; the author promptly introduced the finger and by compression of the artery the hemorrhage ceased. After the patient was anesthetized the wound was opened and a hole sufficiently large to admit the tip of the little finger was found on the external iliac, due to the evasion of the wall by the drainage tube. This artery was then tied. As the sheet covering the patient was lifted up, it happened to catch in the safety pin, passing through the tube on the opposite side, so that the tube was lifted out for a distance of about one-half inch. There promptly occurred a similar alarming hemorrhage. The same conditions were found on this side, necessitating ligation of the left external iliac. Despite the formidable accident, the patient suffered no consequences; within a day or two pulsation appeared in the femorals, and at present the patient is perfectly well. The lesson this case teaches is that rubber tubes should not be used in such a situation. In the future the author has decided to resort to cigarette drains. This is the first case on record of simultaneous ligation of the external iliac arteries.

The author describes the probable routes by which collateral circulation was established.

Ureteral Isthmuses. (Byron Robinson's Three Ureteral Isthmuses.) T. B. WOOD, Chicago. *American Journal of Urology*, January, 1909.

The author calls attention to the three constant constrictions found by Robinson. They are a proximal ureteral isthmus located practically at the distal renal pole (averaging 1-12th of an inch in diameter), the middle, situated at the point where the ureter crosses the iliac artery (averaging 1-7th of an inch in diameter), and the distal, located in the vesical wall (about 1-10th of an inch). It is at these points that ureteral calculi are most apt to lodge.

Treatment of Suppuration of Renal Pelvis and Ureters by Lavage. E. GARCEAU, Boston. *Journal of the American Medical Association*, January 23, 1909.

Garceau presents the literature on the subject of renal lavage and reports some personal cases. The technic is described in detail. He prefers the Kelly cystoscope and says that the operation is simple though some skill is required. The germ usually found is the colon bacillus, but the gonococcus and other germs have also been found. The solution which has given him the most satisfaction is silver nitrate, beginning with 1 to 2000 and gradually increasing the strength. The amount should depend on the condition of the pelvis and kidney. If there is no dilatation, not more than 8 or 10 c.c. should be given at first; the sensations of the patient will be a good guide in this as also in regard to the frequency of the injections. The method is seldom required and care should be taken in selection of cases. As a rule the patient should be under observation for a considerable time before it is undertaken. Acute pyelitis is not suited to this method. Free

drainage of the kidney through the ureter must be secured. The most suitable cases are those of simple chronic suppurative pyelitis without obstruction, but most of these will get well anyhow unless the germ is a very virulent one. It may be used to cure an inflammation in a hydro-nephrotic sac as a preliminary to nephropexy, but the kidney should be supported meanwhile by an appropriate apparatus. It should never be permitted in severe pyonephrosis with general systemic infection and it is not suitable for tuberculous pyelitis or tissue changes tending to sclerosis and thickening. The only positive remedy for such chronic cases is nephrectomy. A permanent catheter in the ureter is dangerous, especially with acute infection and general symptoms. Renal lavage is seldom followed by serious harmful sequelae if properly performed in the right sort of case, but further experience is needed to give the method a definite therapeutic standing.

The Effect of Adrenalin on Intestinal Hemorrhage.

C. J. WIGGERS, Detroit. *Archives of Internal Medicine*, March 15, 1909.

As a result of his experiments, the author arrives at the following conclusions: 1. Large doses of adrenalin (0.05 to 0.1 mg.) cause a short preliminary increase in hemorrhage followed quickly by a decrease or cessation of bleeding. On account of the great preliminary loss of blood they are always contraindicated. 2. Small dose of adrenalin (0.01—0.025 mg.) cause little or no preliminary increase, but shorten the course of hemorrhage. As they save the red blood cells in every way they are therapeutically desirable. 3. The method of introducing adrenalin determines the effect of blood pressure and hemorrhage. No results are obtained by subcutaneous administration. By continuous intravenous injection of weak solutions a slight elevation of pressure can be maintained and hemorrhage simultaneously checked. This can also be accomplished by intramuscular injection. 4. Adrenalin is not indicated in all intestinal hemorrhages. The condition of the blood pressure is the criterion for its use. In hemorrhages of short duration when the pressure has not fallen to any extent, a judicious use of nitrites proves of more benefit than adrenalin. When the bleeding has been profuse, however, and a low pressure already exists, it becomes vital that hemorrhage should be checked without further reduction of pressure. Adrenalin finds its use in this field. 5. The use of adrenalin should always be closely followed by blood pressure observations. A dose sure to be below the safety limit should first be tried and the pressure carefully estimated. If no rise occurs, gradually increasing doses may be injected until a slight elevation of pressure is present, in which case we may be certain that enough has been introduced to affect hemorrhage, and at least no significant preliminary increase has resulted.

The Diagnosis of Intestinal Perforation in Typhoid

Fever. A. J. BROWN, Rome, N. Y. *Journal of the American Medical Association*, February 27, 1909.

Brown calls attention to two new signs which seem to him to be important in the early diagnosis of typhoid perforation. These are what he calls the "dipping crackle" and the tendency of the pain and tenderness to approach the side that is lowermost when the patient is turned on the side. Both of these signs are illustrated by cases. The "dipping crackle" sign is heard on placing the bell of the stethoscope over the right iliac fossa and dipping suddenly with it as in dipping palpation. A very fine crackle was then heard which sounded much like a fine crepitant râle, or as if two sticky surfaces were being drawn apart. This was present in three of his seven cases, and appears to him to be a rather valuable confirmatory sign, as it seems to be due to the fact that in dipping suddenly the parietal and visceral layers of the peritoneum come in contact for an instant, and apparently the inflamed surfaces stick together for a moment and then pull apart. He has never found the sign present over an area of more than two inches in diameter, and never later than four hours after the initial symptom, presumably because the accumulated gas prevents the surfaces from coming in contact. The second sign is due to the gravitation of the extruded contents of the intestine. On the occurrence of a sudden,

sharp pain in the lower part of the abdomen, and especially in the right iliac fossa, accompanied by tenderness, with or without rigidity, the abdomen should be carefully examined and the area of the tenderness mapped out. The patient should then be turned on the unaffected side, and, if, in from fifteen minutes to half an hour, the tenderness has moved one or two inches, or if, at any time the tenderness and rigidity become marked, immediate operation is indicated.

The Treatment of Uterine Hemorrhages by Means of Serum (*Die Behandlung von Gebärmutter Blutungen mit Serum*). W. BUSSE, Jena, *Zentralblatt für Gynäkologie*, February 13, 1909.

The injection of blood serum has proven of use in hemophilia (Weil, Broca). Busse has therefore tried such injections in persistent uterine hemorrhages in which the local findings were negative and in which repeated curettings, climatic treatment, etc., failed to cure. He obtained fresh human serum by abstracting blood from healthy patients operated upon for displacements, through aspiration of an arm vein. Ten ccm. of the clear serum were injected deep into the gluteal region of 10 patients suffering from menorrhagia or metrorrhagia. In three to four days the injection was repeated. Five cases showed immediate and permanent improvement; two required a third injection, and the rest are still under treatment. Except for transient loss of appetite in two instances no after-effects were noted. Care must be taken to avoid the transmission of syphilis by the injection. Possibly fresh animal serum may prove equally efficacious. The author believes that the underlying condition is a mild evidence of hemophilia and that the serum injection increases the coagulability of the blood.

Fibro-epithelial Changes in the Mammary Gland (*Zur Kenntniss der Fibro-epithelialen Veränderungen der Brustdrüse*). P. THEILE, La Chaux-de-Fonds. *Archiv für Klinische Chirurgie*, 1908. Vol. 88, No. 1.

A study of the clinical course and pathology of 21 cases of cystic disease of the breast leads the author to the following conclusions: *Fibro-adenoma*, *cystosarcoma*, *phylloides*, and *mastitis chronica cystica* form a group of diseases of the breast, that has its origin in the same histologic elements. The differences in the architecture of the final tissue product are dependent upon the predominance of either the connective or epithelial tissues, and upon the degree of circumscription eventually attained by the growth. At its inception the pathologic process must be regarded as being a "fibro-epithelial degeneration," rather than inflammatory or neoplastic in nature. A similar phenomenon occurs in polycystic degeneration of the ovary, in prostatic hypertrophy and especially in the thyroid. The very first tissue alteration concerns the glandular elements. These hypertrophy, proliferate, dilate in places and produce small cysts. The connective tissue soon participates in the productive lesion, but never shows evidences of inflammation. The fluctuation of the function of the gland from periods of activity to those of rest, as well as infection, probably play but a subsidiary rôle in the pathogenesis; for, not infrequently can the beginnings of the disease be traced back to the age of puberty.

Although the diagnosis of these conditions is not difficult, the recognition of early carcinomatous change is impossible. Even the pathological examination may not reveal malignancy unless a thorough search for small areas of carcinoma be made. In view of the tendency to cancerous metamorphosis, the circumscribed variety should always be extirpated at once, and expectant treatment should be reserved for those cases in which one or both breasts are diffusely involved, and there only, when the clinical symptoms fail to arouse any suspicion of the presence of malignant infiltration.

The Use of Momburg's Method of Ischemia of the Lower Half of the Body as Applied to Obstetrics (*Über die Anwendung der Blutelecre der unteren Körperhälfte nach Momburg in der Geburtshilfe*). W. SIGWART, Berlin. *Zentralblatt für Gynäkologie*, February 13, 1909.

The method consists in drawing very tightly around the

abdomen, at the level of the umbilicus, one or more turns of a thick rubber tube similar in every way to the application of an Esmarch bandage about an extremity. Experiments have shown that an ischemic uterus contracts very strongly. Sigwart found occasion to employ the method in a case of adherent placenta which required manual removal 13 hours after delivery. The subsequent hemorrhage proved persistent and profuse. Two turns of the elastic constrictor immediately stopped the hemorrhage and caused the uterus to contract firmly. After 15 minutes the tube was gradually loosened and then removed. A second nearly similar case showed cessation of the bleeding quite as promptly.

The method is easy of application and causes no pain or unpleasant after-effects. The appearance of the patient, especially immediately after labor when the abdominal walls are greatly relaxed, apparently cut in two by the tightly constricting tube, is somewhat disquieting, but one or two trials will convince the physician of the harmlessness of the procedure.

Statistical Report on Carcinoma of the Tongue (*Zur Statistik des Zungencarcinoms*). H. EHRLICH, Vienna. *Archiv für Klinische Chirurgie*, 1909. Vol 88, No. 2.

From a consideration of results of surgical treatment of 51 cases of carcinoma of the tongue, operated upon in the clinic of von Eiselsberg in Vienna, the author concludes that in spite of the high immediate mortality of about 25 per cent., the proportion of permanent cures is large enough to warrant the use of our best effort towards securing a thorough radical removal of all of the primary neoplasm as well as regionary metastases in the lymph nodes. The deep glands of the neck should be removed, through incisions over the sternomastoid muscle, as well as the submaxillary nodes. Temporary section of the mandible is often of value in facilitating our approach to the seat of the primary growth. In the after-treatment, particular care should be exercised in avoiding aspiration pneumonia. About 13 per cent. of the cases were definitely cured.

Carcinoma of the Lip (*Beiträge zur chirurgischen Behandlung des Lippenkrebses*). P. STEINER, Budapest. *Deutsche Zeitschrift für Chirurgie*, February, 1909.

The author analyzes the histories of 158 cases of carcinoma of the lip operated upon in the clinic of Dollinger in Budapest, and summarizes his findings as follows: Cancer of the lip occurs ten times as often in the male as in the female. The lower lip was affected twelve times as often as the upper. When the upper lip is concerned, the neoplasm is usually situated laterally; whereas on the lower lip the middle is the most frequent location. Smoking and antecedent inflammatory processes, psoriasis, leukoplakia and scars, seem to be predisposing causative factors. The age of most of the cases was between 55 and 60. As regards operative results, 70.7 per cent. of the patients upon whom a primary operation was done were free from recurrence for more than 3 years, and 69.6 per cent. for more than 5 years. Ten per cent. of those in whom recurrences were operated upon remained free for more than 3 years, but three-fourths of these patients died within one year.

The Differential Diagnosis of Lesions of the Mouth Due to Carcinoma, Sarcoma, Syphilis and Tuberculosis. THOMAS E. CARMODY, *Colorado Medicine*, January, 1909.

Carcinoma (epithelioma) as a rule affects the lower lip, first appearing as a warty or scaly growth, later becoming infected and forming an ulcer which has indurated, irregular edges with a depressed crater-like center. On the tongue, the tip or edges are most frequently involved. There are very few cases where the organ is diseased posterior to the circumvallate papillae. It may first appear as an ulcer, fissure, blister, pimple, lump, warty growth or simply as an excoriation. These undergo cancerous growth from irritation such as a carious tooth, a poorly fitted ductal appliance, salivary calculus or some foreign substance. Caustics, especially nitrate of silver, are used in many sores about the mouth and are probably agents in bringing about the transformation into cancer of many previously benign conditions.

Leukoplakia is seen more often upon the tongue than any other part of the mouth. It is said to be due to syphilis, though it has been demonstrated in patients of rheumatic diathesis. The author saw the condition in three tuberculous patients who denied syphilitic infection. Leucomatous patches upon the mucous membranes do not necessarily become cancerous. The author cites a case of carcinoma beginning in a leucomatous patch on the cheek.

Carcinoma of the maxillary sinus may ulcerate into the mouth or through the cheek to the face. In the later stages it involves the orbit, the ethmoid and sphenoid regions. The sinuses are frequently found infected which sometimes suggests a diagnosis of suppurative disease. Primary carcinoma of the salivary glands is not often encountered, although they are frequently secondarily involved, on account of their proximity to the primary cancer.

The sarcomata, occurring earlier in life, are usually of the small round cell or spindle-cell variety, and therefore of rapid growth. Periosteal sarcomata are found most frequently upon the gums and in the maxillary sinus. The growth in the antrum causes an expansion of the bone and a thinning of the walls. It frequently causes closure of the nasal duct, producing epiphora. Sarcoma may appear on the gum as a small, round, bluish-red tumor, resembling fibroma. Cystic sarcoma attains enormous size. Heath mentions several cases, the largest being that of the lower jaw which, on removal, weighed four and one-half pounds. When sarcomata ulcerate upon secondary infection, glandular involvement is the rule, and it may be difficult to differentiate from carcinoma.

The lesions of syphilis which are most likely to be confounded with epithelioma and tuberculosis are the chancre and gumma. The location gives us no clue, the history being of value according to whether the patient answers affirmatively. The chancre is a round or oval ulcer with clean cut, indurated edges and on the lips, is dried and of a brownish color. Greenwald mentions the fact that the so-called cancer nests are frequently found in the periphery of syphilitic ulcers and that the chancre on the tonsil may give the characteristic appearance of epithelioma under the microscope on account of the dipping down of the epithelial covering into the crypts. The secondary lesions of the tongue are generally small ulcerated areas or cracks of the tip and edges. Their edges are precipitous, fissured and may be undermined. The parts surrounding the ulcer are infiltrated. Tertiary ulcers are generally of greater size and leave scars. Syphilis may affect the accessory sinuses of the nose, producing ulceration of the mucous lining and later necrosis of the bony wall.

Tuberculosis of the throat is comparatively rare. Heller found only five cases with oral involvement out of 8,000 suffering with laryngeal tuberculosis. The tonsils are more often affected than any other part of the oral cavity, probably on account of their having no submucosa and because of the degenerative changes which take place in the epithelium of the apparently normal tonsils. Tuberculosis first appears as small nodules in an infiltrated space, these later breaking down, forming an ulcer which has irregular soft edges, only slightly depressed below the normal surrounding tissue and covered by granulations which may extend above the surface of the normal tissue. The slough covering the base allows the granulations to peep through, appearing like papillae. As a rule tuberculosis attacks the soft palate while syphilis prefers the bony structures.

Carcinoma of the Heart. T. HOMER COFFIN. *The Post-Graduate*, January, 1909.

It is stated by Bodenheimer that carcinoma of the heart occurs in 7.5 per cent of cases of carcinomata with general disseminated metathesis. Primary carcinoma is an exceedingly rare condition. The symptoms depend upon the size and position of the tumor. Large endocardial tumors may cause cardiac insufficiency by preventing closure of the valves. Tumors in the myocardium may produce the symptoms of broken compensation. The case reported was a man, 38 years old, with a soft and friable tumor of the esophagus. On the epicardial surface of the left ventricle, lying in the course of the coronary artery was a small, white nodule, apparently firm and invading the myocar-

dium, which, on histological examination, proved to be carcinomatous. Up to 1897 (Boether's Table) only 40 cases of cardiac carcinoma had been reported.

Acute Traumatic Tetanus Treated by Magnesium Sulphate. A. P. HEINECK, Chicago. *Surgery, Gynecology & Obstetrics*, January, 1909.

Miller reports a case of tetanus of severe type occurring in a boy seven and one-half years of age, in which eleven lumbar punctures were made in the course of thirteen days, approximately 2.5 c.c. of a 25 per cent. solution of magnesium sulphate being injected into the meninges at each puncture. Extensive paralysis followed each injection and involved usually all the muscles, except those of the head, neck and diaphragm, and lasted approximately eighteen to twenty-nine hours. Antitoxin was given daily for fourteen days, in doses varying from 1,500 to 1,700 units; copious saline enemata and infusions, and for a short time, sedatives were also used in the treatment. The patient recovered. Several times the injections were followed by respiratory collapse lasting from eleven to twenty-four hours, and the pulse dropped, though not to a dangerous level. No constant effect of the injections upon the temperature was noted, but retention of the urine was the rule, necessitating catheterization. Altogether the author is convinced that the patient received undoubted benefit from the injections, inasmuch as they prevent the rapid exhaustion due to the convulsions, and in most instances have made it possible for the patient to take nourishment. The author reviews the 14 cases that have thus far been treated with this method; of these, 55 per cent. died. This result is encouraging, inasmuch as almost all of the cases in this series were of the type which usually proves fatal. The author believes that it will be possible at some future date to avoid the dangerous effects of an overdose, when the technic has been more thoroughly worked out.

Heineck reports the case of a male 17 years of age admitted to the hospital with classical signs of acute tetanus. The incubation period was 7 days. Repeated injections—intraneural and subarachnoid—of tetanus antitoxin were given. In addition 5 injections of 5 cm. of a 25 per cent. aqueous solution of magnesium sulphate were made into the dural spine sac. After the first injection no return of rigidity of the lower limbs was noted, and each injection was marked by distinct improvement. The magnesium sulphate produced no alarming symptoms, though a decided rise of temperature followed each injection. The cure was complete. The paper concludes with a review of the literature.

Hemorrhage From the Cystic Artery Controlled by Ligation of the Hepatic Artery (*Ueber die Stillung der Blutung aus der Art. cystica durch Unterbindung der Art. hepatica propria*). H. KEHR, Halberstadt. *Muenchener Medizinische Wochenschrift*, February 2, 1909.

Kehr reports a second instance of successful ligation of the hepatic artery, having performed the first in 1903 for aneurysm of the hepatic artery. In the present instance he operated and found a contracted gall-bladder, large stone in the common duct, a fistula between the duodenum and gall-bladder, chronic pancreatitis, and numerous adhesions shutting off the left side of the abdomen. After closing the fistula, he incised the common duct and removed the stone, then excising the gall-bladder. A very severe hemorrhage resulted from the cystic artery, which could not be located. As the condition of the patient precluded extensive dissection, he at once exposed the hepatic artery after it had given off its gastroduodenal branch and ligated the vessel. The hemorrhage promptly stopped. Ten days later a severe hemorrhage occurred from the depth of the wound, which was promptly reopened. The surface of the right lobe of the liver showed considerable areas of superficial necrosis; tight tamponage, uneventful convalescence. The patient continued well for four months, but then an abscess developed in the scar, which was reopened. The abscess was due to further necrosis. Recovery has been permanent and complete.

The danger of ligating the hepatic artery distal to its gastroduodenal branch is overestimated, although, as in this

case, some necrosis of the liver may result. The numerous adhesions present prevented ligation proximal to the gastroduodenal artery, and furthermore a ligature would have proven useless there, as the active collateral circulation would have allowed the bleeding to continue. Kehr has found Cammidge's reaction of great value. Where present, even if the gallstones cause no symptoms, he operates, as a chronic pancreatitis may be assumed with assurance.

Cholecystectomy vs. Cholecystotomy. J. F. ERDMANN, New York. *Medical Record*, February 13, 1909.

Up to three years ago, Erdmann practiced cholecystectomy oftener than he does at present. He has somewhat limited the indications for this operation in recent years and for two reasons. First, because if a secondary choledochotomy becomes necessary, as occasionally happens, the operation becomes exceedingly difficult and hazardous. Secondly, because the constant formation of a diverticulum in the stump of the cystic duct after removal of the gall-bladder has led him to believe that the gall-bladder is, after all, a necessary organ. The author, therefore, now practices cholecystotomy only in cases where the gall-bladder is gangrenous, or the seat of calcareous degeneration; also if the walls of the organ are greatly thickened and the organ is the seat of an acute inflammation. In ulceration perforations, as occasionally occurs in typhoid and gun-shot and other extensive lacerations, the author advocates removal of the organ. He limits the operation of cholecystotomy to cases where the walls of the gall-bladder are not too thick and are free from ulceration or gangrene, and in which the element of time is an important consideration. The author's experience in malignant cases has been so discouraging that he is inclined in the future to merely close the abdomen, except where the growth is very small.

The Value of the Cammidge Reaction in the Diagnosis of Pancreatic Disease. EDWARD H. GOODMAN, Philadelphia. *Annals of Surgery*, February, 1909.

Goodman made Cammidge tests in 62 cases of various abdominal diseases. He secured positive reactions in 10. In 7 of these 10 cases the presence of pancreatic disease was proven, at operation or autopsy; one patient died with clinical symptoms of acute pancreatitis; and in the remaining 2 cases a concurrent pancreatic lesion was not improbable. Of the 52 cases with negative reactions, 2 were of acute experimental pancreatitis (in a series of 4), 1 was of carcinoma of the pancreas, and 1 (out of 2) was of carcinoma of the stomach and pancreas.

Goodman (who, since preparing this article, increased his observations to 150 or more) believes the Cammidge test to be very useful. While the reaction is not pathognomonic, it is, in connection with the clinical history and examination and a study of the feces, strongly suggestal of pancreatic disease.

Fatal or Serious Results Following Operative Treatment of Buboos. EUGENE FULLER, New York. *The Post-Graduate*, January, 1909.

Buboos generally lie just above Poupart's ligament. Active suppuration may cover an extensive area and the depth is only limited by the external oblique fascia. Such suppurations are usually checked by the natural infiltration around them, and as a rule point externally. The dangers lie in two directions. First, in a direct or indirect injury to the deeper bloodvessels, and second, in an inflammatory invasion of the lymph space between the fascia propria of the pelvis and the peritoneum, the infection having entered through the abdominal fascia. An almost fatal termination is the result of wounding one of the deep vessels while operating on the abscess. The danger from indirect injury to these bloodvessels lies in unduly exposing their walls during operation through the removal of the connective tissue and the fascial coverings, thus allowing the infective process causing the bubo to come in direct contact with them. Such an infection may cause septic phlebitis or thorough alternative action, secondary hemorrhage.

The author sums up as follows: In making a primary

incision be careful not to enter the knife-point too deeply. Make the external opening so free that there can be no premature closure of the external wound. It is best to make a crucial incision. Never curette necrotic contents, but allow them to separate by themselves. In the case of tubercular buboes, enucleate the glands by blunt dissection.

Sacral Anesthesia (*Ueber Sakrale Anästhesie*). W. STOECKEL, Marburg. *Zentralblatt für Gynäkologie*, January 2, 1909.

Stoeckel has used Cathelin's epidural route in order to determine whether labor pains could be rendered less painful by a method not entailing the accidents and dangers of spinal analgesia. The injection is made, the patient lying on her side with thighs in extreme flexion, just above the internatal fold and directly in the median line. The sacral hiatus is plainly felt immediately above the base of the coccyx. As the dural sac ends several centimeters above this region the injection is strictly extradural and among the fibers of the cauda equina. Novocain and eucain B., of the former 0.1—0.15, of the latter 0.05—0.01, in from 30-35 ccm. of salt solution, either with or without the addition of suprarenal extract, were used at each injection; 141 cases were injected. The uterine contractions appear to be diminished if the injections are made early during labor, otherwise not; the backache disappeared in half the cases, the abdominal pain in one-quarter; the muscles of the perineum were markedly relaxed in some instances and anesthesia of the vulva supervened occasionally. The fetus was not affected in any case. Retention of urine during the puerperium (so common after spinal injection) did not occur once, nor did any untoward symptoms develop.

In five cases of primary dysmenorrhea the severe backache was relieved for the remainder of that menstruation by a single injection.

Stoeckel says that his work is as yet in an experimental stage. The only sure fact is that the method is harmless and has proven of value in numerous instances.

A New Operation for Ingrowing Toe Nail. WILLIAM L. KELLER. *New York Medical Journal*, February 20, 1909.

The operation is described as follows: Twenty-four hours previous to the time of operation the foot and toes are thoroughly scrubbed with tincture of green soap, after which the nail is trimmed straight across its free border and the surface exposed and thoroughly cleansed. Tincture of iodine is now applied around the entire margin of the nail and a 1-2000 bichlorid of mercury dressing applied. At the time of operation, the parts are again scrubbed thoroughly. Hemorrhage is controlled by a rubber band around the base of the toe and local anesthesia obtained by injection of a weak cocain solution. With a sharp scalpel the nail is split down its center and to the bone; the next step is the freeing of the matrix and lateral border of the nail by an incision down to the nail almost three-sixteenths of an inch from the lateral border extending back beyond the base. The scalpel is carried along the outer border which is lifted up and the scalpel is directed close to the bone, under the matrix, to within one-quarter of an inch of the median line. The freed lateral border is then elevated with the handle of the scalpel and the matrix beneath is removed and the sides elevated are allowed to rest on the healthy tissues. A strip of gauze is inserted underneath the edge and a wet dressing of magnesium sulphate applied. For a few days the foot should not be used. The advantages of the operation seem to be that of simplicity, radical cure, minimum tissue destruction and decreased suffering from pain, rapid restoration of the normal condition of the tissues and short period of convalescence.

Accidents and Complications in Goiter Operations. C. H. MAYO. *The Journal of the Minnesota Medical Association and The Northwestern Lancet*, February 15, 1909.

A slipping of the ligature around an artery has been the cause of delayed hemorrhage. The ligature has always been the one ligating the superior thyroid artery. A

large amount of blood may be lost in operating upon colloid goiter. In order to cleanse the wound and make it possible to secure the artery it may be necessary to compress the common carotid between the fingers, one within and the other without the wound. Occasionally a dense colloid or exophthalmic goiter will greatly compress the trachea which has become softened. Such a condition may require tracheotomy. Hoarseness or complete loss of voice may occur from pressure of a hard goiter compressing the recurrent laryngeal nerve. Deep suturing with catgut may include the nerve. Unless one wishes to encounter a condition of hypothyroidism, a portion of the gland should be left in situ. The parathyroid bodies are seldom seriously diseased and when removed it is an accidental complication which may not cause trouble, if but one or possibly two are injured or taken out. Although the author has never seen tetany in any of his cases, he is careful to replace beneath the capsule any small detached gland-like body resembling those removed during thyroidectomy.

Disappearance of Goiter Following Adenoidectomy. P. B. CABLE. *Indianapolis Medical Journal*, February, 1909.

The following case is reported: The patient was a boy fifteen years of age who had a pronounced uniform enlargement of the thyroid gland. He was put upon tonics and treatment with electrical currents with no improvement. In the course of examination, a large adenoid was discovered which was at once removed under local anesthesia. The following week marked improvement was noticed in the size of the goiter, and in four weeks recovery was complete. Just what bearing the removal of the adenoid may have had upon the goiter is difficult to explain, but since the improvement did follow, it is a relation worth noting.

The Pathology and Therapy of False (Acquired) Diverticula of the Large Intestine (*Zur Pathologie und Therapie der falschen (erworbenen) Divertikel des Dickdarms*). F. FRANKE, Braunschweig. *Deutsche Medizinische Wochenschrift*, January 21, 1909.

Diverticula may occur in any part of the intestinal tract, but are most commonly met with in the large intestine, and especially in the sigmoid flexure. They vary in numbers from a mere few to many hundreds. They are usually small, round, and in the mesenteric border. In the large intestine they have a predilection to penetrate into the fatty appendicis epiploicae; nothing is positively known of their pathogenesis. They occur most frequently in the later periods of life. The diverticula may become filled with inspissated feces or even coproliths and thus give rise to a number of inflammatory reactions. Some of these consequences may be perforation, abscess formation, adhesions to surrounding viscera, inflammatory constriction of the gut, mesosigmoiditis with secondary kinking of the bowel, etc. The clinical manifestations of this malady are therefore very protean. In nearly all cases, however, a tumor is manifest, necessitating a differentiation from carcinoma. The history and long duration of the disease usually serve to accomplish this. Difficulty may arise from the fact that in a few instances a carcinoma has been found in association. The treatment is purely surgical, and may consist in either colostomy or resection of the affected portion of the sigmoid flexure. The latter operation was the one done by the author in the case which he reports, and with successful results.

Paralysis of the Left Recurrent Laryngeal Nerve in Mitral Valve Disease. WILLIAM OSLER. *The Montreal Medical Journal*, February, 1909.

In mitral valve disease with great dilatations of the left auricle and compression of the recurrent larynx nerve there may be a combination of symptoms and physical signs most suggestive of aneurism. In a few instances both nerves have been paralyzed and it has been suggested that the enlarged heart drags down the aorta and the right subclavian artery sufficiently to cause atrophy of the nerves as they pass beneath these vessels.

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THE SURGICAL IMPORTANCE OF THE VISCERAL CRISES IN THE ERYTHEMA GROUP OF SKIN DISEASES.*

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I have selected this subject for the paper of the evening in order to bring before the Surgical Section of the Academy of Medicine, a condition which is very uncommon and which has received but little attention in this country. It is of very great interest to physicians as well as surgeons. I say uncommon, because a very careful examination of the title of papers published since 1900 revealed very few on the surgery of this subject published in this country, in fact, only four giving reports of cases operated on. A few articles have appeared in the English medical journals.

To Osler¹ more than any other writer is due the credit of calling the attention of the medical profession to the surgical importance of the visceral crises in the erythema group of skin diseases. He has written no less than five articles, and has collected twenty-nine cases illustrating the subject. In fact, he is so deeply impressed with the importance of this subject that he states that the possibility of mistaking these visceral crises for appendicitis or intussusception or obstruction of the bowels and handing the patient over to the surgeon for operation is by no means remote. Although Osler² classifies these cases into five groups, there are only three of great interest in connection with this paper.

"First, those in which the colic occurs in connection with a pure angioneurotic edema,—Quincke's disease.

"Second, in this class there is arthritis associated with the erythema or purpura and colic, the group which Henoch describes and the form known by his name.

"Third, there is a remarkable group of cases, really most difficult to recognize, in which there is

only recurring colic and nothing else. These attacks of colic may recur for years and years before any skin lesion appears."

In a careful examination of the literature of the subject I found nine cases operated upon, to which I add a personal case recently operated upon, and two cases examined after death. The history of my case is given in full.

GROUP I.—Those cases in which the colic occurs in connection with pure angioneurotic edema, Quincke's disease. Two cases.

CASE I.—Osler. A young woman who had many attacks of nausea with vomiting, and tenderness over the abdomen. An operation was performed for appendicitis but the appendix was found to be normal. Following the operation angioneurotic edema appeared on the face and she has had several similar attacks since.

CASE II.—Dr. T. B. Harrington³ reports the case of a young woman, aged 26, single, who fifteen years ago began to have swellings in hands and feet, accompanied by no pain. Has been having attacks ever since at decreasing intervals, at present every two weeks; swellings extend to elbows and occasionally involve the face. Abdominal pain limited to lower half of abdomen, not well defined, does not radiate; nausea, vomiting and headache with attack. The vomit is liquid and green, never bloody, and one to two quarts at a time. Has never been jaundiced, but is constantly troubled with gas and distress after meals. Bowels regular, stools never bloody. Urine negative. Operation during an attack of colic. Good amount of clear fluid among the intestines and filling pelvis; nothing found in abdominal organs except that the intestines were engorged with blood, and so red that a mild peritonitis was at first suspected. No hemorrhagic areas in intestinal canal. At a short distance from the ileo-cecal valve, a cylindrical enlargement of the ileum was seen 2½ inches long, and entirely surrounding the gut, increasing the circumference of the bowel to twice the ordinary size. The swelling was evidently in the bowel wall, was elastic to the touch, but did not pit on pressure. Appendix removed and found normal. Harrington states: "It can be easily understood how such an infiltration could derange peristaltic action of the intestine. The engorgement of the intestine and the free fluid were explained by the violent peristalsis brought on in the effort to press down the lesion which was actually in the intestinal wall. There was no distension above the lesion since the finger could be easily

* Read before the Surgical Section, New York Academy of Medicine, February 5, 1909.

passed into the swelling at either end. She had a comfortable convalescence though some colic attended the first movement of the bowels after operation. An attack of swelling of the skin came on before her discharge from the hospital."

Morris⁴ in writing of angioneurotic edema states that "it is a disease characterized by transient swellings in various parts of the body, as, for example, in the skin of the extremities, of the face, in the mucous membranes of the mouth, pharynx, and larynx. Severe gastro-intestinal symptoms of comparatively short duration often accompany the visible swellings or alternate with them."

Heredity plays a prominent rôle in the etiology. Ensor⁵ states: "Out of eighty persons in one family, thirty-three are or were affected with the disease. In another family the disease could be traced back through six generations. It occurs at all ages, but seldom before puberty, and the tendency to recurrence remains throughout life." Harrington adds "that for the first few years the manifestations of angioneurotic edema are limited to the skin, when gradually abdominal symptoms become prominent. The abdominal symptoms may be due to either gastric or intestinal lesions, or to both. Colic, vomiting, diarrhea and occasional passage of blood are the usual symptoms. The pain ordinarily begins in the epigastrium and spreads over the abdomen. It is a generalized pain and does not radiate to the shoulder blade or other diagnostic localities. At first the painful attacks may show themselves once a month and disappear after a few hours and without further disturbance, but later in the disease nausea and vomiting supervene in each attack. The pain is probably due to interference with the function of the stomach and intestines by the edematous deposit."

Morris reports a case in which a portion of the gastric mucosa becomes detached in using the stomach tube. It was examined histologically and showed an extreme edema of the interstitial tissue, the lymph spaces and vessels being enormously distended.

GROUP II.—In this class there is arthritis associated with the erythema or purpura and colic,—the group described by Henoch.

Under this head Osler¹ reports a case of Dr. McCrea's, Sutherland⁶ reports two cases, Barron⁷ one, Fisher⁸ one, Lett⁹ one, Smith¹⁰ two, and Greig¹¹ one. I report the following case:

CASE IV.—J. G., aged 6 years and 8 months; born in this city of American parents. Father died of septic endocarditis. Mother alive and perfectly well. As a baby, was thin, delicate, perspired freely about the head. Slow closure of the anterior fon-

tanelle. During infancy the patient was bottle-fed. Malted milk was the principal food; later beef juice and oatmeal gruel were added. This diet was continued until three years old. Would often have pains in the joints especially when handled. When about three and a half years old he was suddenly seized with attacks of being unable to walk, coming toward evening. He then had to be carried, for the pains were severe in the legs and feet. These pains were not accompanied by swelling or redness in joints. Sometimes a slight red rash would come out over the body; this would begin about 6 P. M., and last until he went to sleep. In the morning he would be very bright. On August 20, 1908, had an attack of vomiting and colicky pain in the abdomen after eating ice cream. There was no rise of temperature, and the pain passed off in a few hours after the administration of a cathartic. Soon after he had to be carried upstairs for a few days on account of pains in the knee and ankles. No swelling or redness. September 15, 1908, had a similar attack and was relieved by calomel and castor oil.

On September 25th, after eating ice cream, was again seized with very severe pains, more or less continuous, in the region of the umbilicus. After a few hours the pains became localized about McBurney's point. Vomited several times. No blood in vomitus. Temperature 99.4°, pulse 90, respiration 24. Ice bag applied to abdomen and calomel given. When I saw the case early in the afternoon of the next day the pain was less and vomiting had ceased. A papular urticaria with dark centers was noticed over the body on the arms, hands and buttocks. Pressure over the calves of the legs caused pain. The abdomen was retracted but not rigid. Pressure produced pain as above. The pulse was very weak; tongue coated. The boy looked very ill and acetone could be easily recognized in the breath. Looking upon the case as one of gangrenous appendix, I advised an operation, but before the question was decided I asked that Dr. Francis Huber be called to see the boy. After a careful examination Dr. Huber also advised operation. We decided to operate at the child's home at 8:30 the same evening. I had also advised that Dr. Sondern be called to make an examination of the urine, and a blood count. About 6 P. M. I received Dr. Sondern's report on the blood: "A very slight leucocytosis (12,800) with a normal differential count." He also stated that he would telephone the report of the urine to the patient's house and requested me to delay the operation until I heard from him. He reported the presence of a large quantity of acetone, some diacetic acid and a marked excess of indican, but no albumen, blood or renal elements; and he advised very strongly against operation as the patient would probably bear the anesthetic very badly on account of the presence of acetone and diacetic acid in the urine.

Operation was postponed. Sodium bicarbonate, 5 grains, in vichy by mouth, and 30 grains by enema were ordered. The patient had quite a comfortable night and seemed better the next day. All went well excepting slight attacks of pain until the morning

of October 13, 1908, when Dr. McGowan was called to see the boy, who was then suffering most agonizing pain, screaming out and throwing himself about the bed. There was tenderness on pressure in the right iliac fossa and over the epigastrium; the right rectus was somewhat rigid. A tumor in the right iliac fossa was easily felt by Dr. McGowan. A papular eruption was noticed about the right ankle. Morphia was required to relieve the pain. When I saw the child in the forenoon of the same day there was some tenderness on pressure over the points mentioned above, but no tumor was felt. The child seemed so ill that I decided to open the abdomen.

At 2:30 P. M. of the same day, with the assistance of Drs. Huhn, Sheils and McGowan, Dr. Gwathmey administering ether, I opened the abdomen through a Kammerer incision. Some free fluid escaped. The appendix was examined and removed. It was found to be four inches long, pale, contracted, clubbed at its end and strictured near its attachment to the cecum. The last six inches of the ileum were much enlarged, its walls thick, edematous and of a very dark color, with no ecchymosis. It appeared like a portion of a bowel that had been the seat of an intussusception. The incision was enlarged upward slightly and the entire length of the small intestine, from the ligament of Treitz to the beginning of the last six inches of the ileum, was very pale and in a condition of spasmodic contraction which relaxed the moment it was touched. Two spots of ecchymosis about the size of a five-cent piece were found in the wall of the intestine just below the point where the gut passed under the ligament of Treitz. The mesentery of the small intestine was studded with enlarged glands. Those nearest the swollen intestine were of considerable size, but grew smaller as they approached the root of the mesentery. The wound was closed and the patient's convalescence was uneventful until about three weeks after the operation when an attack of paroxysmal pain occurred during the night. In the morning the temperature was subnormal. On careful examination of the skin a perfectly characteristic purpuric eruption was seen on the ankles, extensor surfaces of the knees and elbows. Indican in considerable quantity reappeared in his urine. One of the marked features in this case was the obstinate constipation existing through the entire illness. Cathartics in large quantities had little or no effect.

A few days ago while the boy was playing on the street another boy struck him on the abdomen. This was soon followed by a passage of blood from the bowels.

The following are the most important symptoms of Henoch's purpura. The affection runs a somewhat prolonged course, but begins suddenly, without obvious cause of antecedent illness. The symptoms affecting the alimentary tract are of a marked character. The abdominal pain is severe, frequently of extraordinary intensity, of a colicky nature, occurs in paroxysms, and is referred to the umbilical, epi-

gastric or the right inguinal regions, and sometimes over the sigmoid. The patient cries out, tosses about, presses his hands on the abdomen, or presses the abdomen on the bed. Nausea soon follows, and frequently the vomited matter contains blood. The tongue rapidly becomes coated. The breath is offensive and may bear the odor of acetone. At first constipation is marked, but in a few days diarrhea sets in, the movements are offensive and in some cases may contain blood and mucus. Constipation may be a marked feature throughout the entire illness, as in my own case and one other mentioned. The act of vomiting, or an evacuation of the bowels, seems to give temporary relief to the abdominal pain. The abdomen in the majority of cases is slightly rigid but not distended as a rule.

Tenderness may be present on pressure in the umbilical region, over the epigastrium, the right iliac fossa, and the region of the colon, especially if tenesmus is a marked feature, as sometimes happens; but as a rule there is nothing abnormal to be detected on physical examination. The attack may last for a few hours or a few days, and then there is a gradual remission of the symptoms until the next attack. "They have a great tendency to recur for weeks, months or even years. They are coincident with the skin eruption but may even precede it by several hours, sometimes a few days. The abdominal symptoms are such as may well be due to serous or hemorrhagic effusion into the coats of the gut; it being essential that the serum or hemorrhage should be within the intestinal wall, and not merely from the mucous surface, for melena is extremely common in all forms of purpura without colic." Lennander¹² who has devoted much time to the study of the cause of abdominal pain, states "that either serous or hemorrhagic infiltration of the wall of the stomach or intestines, if sufficient to produce stretching of the mesenteric attachments, would produce colic." Clinical and post-mortem observations show that hemorrhage into the intestinal wall may give rise to intussusception, also that necrotic ulcers may form, perforate and cause death from purulent peritonitis. Occasionally, but not always, hemorrhage occurs into the mucous membranes of the nose and throat, and may lead to more or less epistaxis. Then hemorrhages may be seen in the lips, cheeks, mucous membranes of the palate and the gums. Never, however, does loosening of the teeth occur as in scurvy. Nor is swelling, a spongy change in the gums, or ulceration observed.

Pains, with or without swelling and redness, at the joints are present in many of the cases, and vary in intensity from slight inability to walk to pains re-

sembling acute rheumatism. The knees, ankles and elbows are the joints most frequently involved. The pains are temporary as a rule. The blood presents no characteristic changes. Osler¹³ states there is a slight leucocytosis. Usually the number of leucocytes is below 14,000, although in sixteen cases of which blood counts were made, in two a leucocytosis of 30,000 was recorded. There is usually a normal differential count. Dr. Sondern's report in my own case gives a perfect picture of the changes in the blood, viz., a very slight leucocytosis, 12,800 with a normal differential count. The urine not infrequently contains albumen, blood and casts. One other symptom that is mentioned in the history of almost every case, the facial appearance is that of a patient very seriously ill, and the prostration is most marked.

Sutherland¹⁴ in speaking of the eruption in Henoch's purpura, states that "the skin hemorrhages differ in some respects from those met with in the common forms of purpura. They are as a rule lighter in color and of a blotchy character, so that the eruption might easily be confounded with that of measles. The type of the eruption varies greatly at different times. There is often a diffused erythema, with raised wheals of an urticarial character which subsides later into papules or nodules with a dark center. The distribution is characteristic, a special preference being shown for the extensor surfaces of the large joints, viz., the hips, knees, and the elbows."

Lett states that in his case as the days passed the purpuric eruption spread over the most of the body; the wound became purpuric and sloughing with beginning gangrene of the fingers of the right hand. The eruption may appear early in the disease or not until the patient has suffered for many years from attacks of recurring colic. If the eruption has not appeared before operation it may appear the following day, the operation possibly having some influence in bringing it to the surface. The cases of Henoch's purpura are so rare, and so little has been written on the surgical importance of the subject, that a physician or surgeon might easily overlook, in the face of the prostrated appearance and urgent symptoms, the presence of a diffuse erythema or papular urticaria and advise operation, unless his attention had been specially called to the subject. But when there is a marked purpuric eruption more weight would be placed on its presence and delay in operating advised.

DIFFERENTIAL DIAGNOSIS.—The most important surgical diseases to be differentiated from Henoch's purpura are (a) intussusception; (b) appendicitis.

In those cases where the visceral crises occur independently of the skin lesions, it is most difficult to differentiate between these diseases.

(a) *Intussusception*: Lett states "that a purpuric eruption, joint pains, hematuria, vomiting of blood, or a history of a previous attack should remind one that the patient may be suffering from Henoch's purpura. In the absence of all these signs it may also be remembered that whereas Henoch's purpura is rarely met with in children under three years of age, and generally occurs in children several years older than this, the great majority of cases of intussusception occur in babies. Mr. Fitzwilliams, in 648 cases under the age of twelve years, found that 466, or 71.9%, occurred in children not more than twelve months old, and only 6% between the ages of seven and twelve."

The character of the onset of the abdominal pain will not materially help the diagnosis, as in both intussusception and Henoch's purpura it is sudden and may be preceded by diarrhea. In both conditions the pain is paroxysmal and extremely severe; between the paroxysm the patient is fairly comfortable, though in the later stages of intussusception the pain becomes more continuous. A slight rise of temperature is not uncommon in both conditions.

Erdman¹⁵ and others say that the vomiting in intussusception is not an early symptom, *i. e.*, within the first twenty-four hours, but it is present in almost every case over that duration. If severe vomiting is present from the beginning, and especially if the vomit contains blood, the probabilities are against the case being one of intussusception. Tenesmus is an early symptom in intussusception, especially if accompanied with frequent passages of blood and mucus per anum, though tenesmus with passages of blood and mucus may occur in Henoch's purpura.

The presence of a tumor Lett believes to be the crucial test, and the one which should be relied upon above all others in making a positive diagnosis of intussusception. Statements vary as to the frequency with which a tumor can be felt. Erdmann¹⁶ states that "palation is not followed in 50% by the finding of a tumor, and certainly not the classical sausage-shaped tumor of the text-books; but one is more likely to find no tumor from the fact that very often the tumor is hidden behind the costal arches of either side," in cases of intussusception. Rectal examination reveals a tumor far less often in intussusception than does abdominal palpation, unless the case be one of a day or more duration, but as a rule, and I might say almost invariably,

withdrawal of the examining finger is followed by blood and mucus. Mr. M'Adam Eccles found a tumor present in 83.3 per cent. in a series of sixty-eight cases of intussusception. Lett reports tumor present in 100 per cent. in a series of twenty-four cases operated on by himself; in some of which cases, however, anesthesia was needed to relax the abdominal wall. Hemorrhage into the intestinal wall may produce a tumor which can be palpated, but in most cases it will lack certain features which are characteristic of an intussusception. It will not contract and become more obvious on palpation and during a paroxysm. Nor will it be possible to partially reduce it by palpation through the abdominal wall.

Abdominal tenderness, with or without rigidity, and distension, is not present, as a rule, in Henoch's purpura. In intussusception the abdomen is neither distended nor tender at first, though the intussusception is tender and manipulation causes it to become hard and will bring on an attack of pain.

In Henoch's purpura there is a slight leucocytosis and a normal differential count. In intussusception just as soon as the bowel becomes constricted and the circulation interfered with, there will be a leucocytosis and an increase in the polymorphonuclear cells.

(b) *Appendicitis*: The disease may be differentiated by the sudden onset of pain, often first in the epigastric region, then in the right iliac fossa, rarely paroxysmal, rapidly diffusing itself upward and across the median line to the left, if the case is very acute. Although vomiting frequently occurs in appendicitis it occurs at the onset, is of short duration and most frequently of the contents of the stomach only. A tumor may be felt, but this is generally late in the disease after abscess formation; or sometimes early, especially in children, caused by a mass of omentum surrounding the appendix, this being found just below and to the right of the umbilicus. It does not have the doughy feel of the tumor in intussusception, nor does it contract and cause colicky pain during examination.

In appendicitis, abdominal tenderness and rigidity are generally marked, especially over McBurney's point or just below the liver; if perforation has taken place the entire abdomen is tender and rigid. The bowels, as a rule, are constipated, diarrhea is not infrequent, but there are little or no tenesmus, and no bloody stools containing mucus. The temperature is generally above 100° F., the face flushed and the patient has the appearance of suffering from an inflammatory disease, except in the very acute gangrenous form when the temperature

may be subnormal. Appendicitis is not limited to any age. The blood count shows leucocytosis, in many cases very marked, and a great increase in the polymorphonuclear cells, varying from 70% to 95%. There will be no eruption, or angioneurotic swellings, joint pains, hematuria, nor previous history of frequent attacks of paroxysmal pain, often covering a long period of time.

My experience with one case, and a careful study of the cases reported leads me to emphasize the practical lessons drawn by Osler¹ "first, that in children with colic the greatest care should be taken to get a full history, which may bring out the fact of previous attacks, either of skin lesions, or arthritis, or of intestinal crises; and secondly, to make the most careful inspection of the skin for angioneurotic edema, purpura or erythema," and I may add that in an accurate examination of the blood, with a differential count we have the most important aid in differentiating those cases which need surgical treatment.

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5 EAST 43RD STREET.

MORPHINE IN SURGICAL NARCOSIS.

1. Whenever morphin is to be given it should always be given before instead of after the operation, in order to obtain the benefit of this drug in the induction and maintenance of anesthesia.

2. All athletes and alcoholics should have this preliminary dose of morphin.

3. In extremes of life, the very old and the very young, morphin should be administered with very great caution.

4. Whenever morphin is administered the anesthesiologist should maintain a lighter narcosis than when this drug is not administered.—JAMES T. GWATHMEY in the *J. A. M. A.*

THE USE OF FLUORESCENT SALTS (EOSIN, SCARLET RED, ETC.) IN THE PRACTICE OF SURGERY.

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AND

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The property of the fluorescent substances (as the chinin derivatives, fluorescein, neutral red, acridin, eosin, scarlet red, erythrosin, Rose bengale, etc.), of destroying bacteria has long been known, but only little application of these facts has been made in the practice of medicine.

The interesting studies of von Toppeiner and Jesionek, of Noguchi and Flexner, induced us to experiment with the application of eosin and scarlet red in various surgical and medical afflictions. It has been shown that certain fluorescent substances, *e. g.*, eosin and magdala red are inimical to the growth of many fungi. Many bacilli are acted upon in a similar way and in the presence of sunlight. Rats are rendered immune against tetanus by being treated with eosin (Noguchi). Von Toppeiner reduced the power of diphtheria toxin by exposure of the poison to eosin and sunlight. The toxicity of certain snake poisons, as that of cobra, daboia and crotalus, is diminished by eosin and erythrosin and exposure to sunlight (Noguchi). Injections of eosin, erythrosin or Rose bengale into the shaved skin of the ear of a rabbit, and exposure to light, produces inflammations that may result in necrosis and exfoliation (Noguchi). Von Toppeiner as early as 1903-1904 experimented with eosin, applying it by various methods to neoplasms and parasitic afflictions of the skin, afterwards exposing the parts to the sunlight. He also injected it into the tissues. During the last year we have made extensive use of eosin and scarlet red in pus infections and large skin defects, both on man and animals, especially rabbits and dogs. Ulcerations were artificially produced, and the infected area was treated by the application of a 5-10 per cent. aqueous solution of eosin. The animal treated with eosin always recovered rapidly, while some of the control animals even died from the infected wounds; the eosin animals were always kept in direct sunlight, while those who were kept in dark boxes always showed delayed healing. The method of application is simple enough. The wounds are painted with a 5-10 per cent. aqueous solution of eosin, covering it at once with a thin layer of cotton to exclude dust, and exposed at once to sunlight; the wounds were thus treated daily.

We have employed the eosin solution in conditions like stitch abscess; in suppurating incised wounds; after operations for osteomyelitis; in infected joints; in several cases of eczema; in several cases of gonorrhea, injecting the eosin into the urethra, and keeping the solution in contact with the mucosa for at least half an hour.

In several cases of actinomycosis (and actinomycosis is fearfully prevalent amongst the cattlemen in Mexico) we injected a 5 per cent. solution of eosin into the affected parts, at the same time giving sulphate of copper internally in doses of gm. 0.008 t. i. d. p. cib. There usually followed a rapid breaking down of the affected tissues, forming a crater, which was painted with eosin; when the wound was clean it was finally treated with scarlet red to promote epithelial growth. We have also seen a few good results following the use of eosin in tuberculous affections of the skin and tendons. In the treatment following removal of the turbinated bones and in infections of the nose and antrum of Highmore, there was astonishing success. In cases of endometritis, the endometrium is first swabbed with formalin (40%), dried thoroughly and then treated with a 10 per cent. solution of eosin. The results have been uniformly good.

In carcinoma of the uterus, mammae and the face and neck, we have employed it by injecting it into the substance of the tumor and painting the surface of the growth. In uterine cancer, especially, extensive separation of the cancerous masses took place; curetting was then practiced with application of more eosin and acetone (to remove the odor). We also employed it in infected inguinal glands by making a minimal incision, removing the infected material and painting the abscess cavity with eosin, and then filling it with gauze moistened with eosin. The cases of bubo treated in this manner healed faster than those treated with nitrate of silver.

It is not necessary to fill up this article with histories of clinical cases, as a short trial of the remedy will soon show its value.

We have also experimented with scarlet red, employing it suspended in olive oil, vaseline, or together with ung. zinci oxidi (in a 5-10 % proportion).

Schmieden has demonstrated that, injected into the tissues, scarlet red produces atypical epithelium, which may even simulate carcinoma. He thinks the action is evidently a chematactic one. On the other hand, Werner, experimenting with scarlet red on mouse tumors, thinks that the cell proliferation is not the result of chematactic action, but from cell irritation, as the proliferation always occurred

away from the point of injection and never *in loco*; this seemed to prove that the cells are not attracted to the dye. For further studies on the action of dyes and chemicals on the cells see page 404, Ehrlich's work on Immunity (translated by Dr. Baldwin, N. Y.) on "*The relations existing between chemical constitution, distribution and pharmacological action.*"

For the employment of scarlet red, the wounds should be thoroughly dried, and the salve applied in not too thick a layer; this remains from twelve to twenty-four hours, when it is removed and covered with plain vaseline or olive oil. The wounds are thus treated every two or three days; though some patients can tolerate it daily.

We have treated enormous skin defects by this method and with good results. A large ulcer occupying all of the region over the spina scapula was healed in six weeks, having resisted previously all other treatment for more than two years. In this case, when not applying scarlet red, the wound was painted with eosin and exposed to the sunlight. Other large defects, as after mammary extirpations, extensive scalp wounds and *ulcus cruris* (with simultaneous saphenectomy) were readily influenced by it.

We employed it also in ulcerations of the nose. Most of the cases treated with scarlet red were treated on the "alternate days" with eosin.

The clinical material here in town is plentiful, being composed principally of nothing but excessively filthy Mexican Indians, so the sanitary surroundings are of but little help in the employment of the eosin or the scarlet red. That, in spite of much filth, we get uniformly good results, speaks for the value that there must be in the treatment. The non-toxicity of eosin and scarlet red permits their use in almost any place (in the eyes we have not tried it as yet; all the cases of ophthalmia neonatorum being treated with nitrate of silver or sulphate of copper according to long established rules). The applications can, if necessary, be entrusted to patients who live far away and are able to visit the physician but rarely.

Here we do not distribute the prescription for this remedy but prepare it in the hospital drug store.

Dr. Ortiz Sanchez, of this city, has been using eosin in the treatment of eczema of the face and axilla, painting the surface and exposing it to light; the results were all good.

The only drawback to these drugs is the property of staining the clothes coming in contact therewith; however, this is but a lesser evil.

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OPERATION FOR INGROWING TOE-NAIL.

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Ingrowing toe-nail is a chronic ulceration of the nail which requires for its relief the temporary or permanent removal of the irritating nail. This may be done by,

1. Trimming away the offending portions of the nail. This simple procedure is a favorite

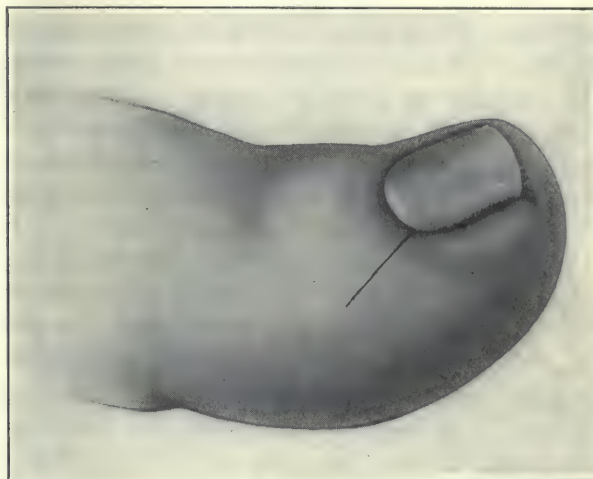


Figure 1.

method of the chiropodist and is successful in a large number of the simpler cases, but in those which deserve surgical treatment it is not enough.

2. By evulsion of the nail.

This will cure a fair number of cases, but in many the trouble will recur when the nail grows out again.

3. By various operations for removing the nail fold.

The objections to this type of operation is the fact that scar tissue replaces the nail fold and is hardly less susceptible to irritation than the tissue which it replaces.

4. Operations for removing the nail fold and part of the nail with the matrix on the diseased side.

This operation is open to the same objection as those of the preceding type, in that when healing has occurred scar tissue lies against the nail edge.

The operation here described leaves the nail fold

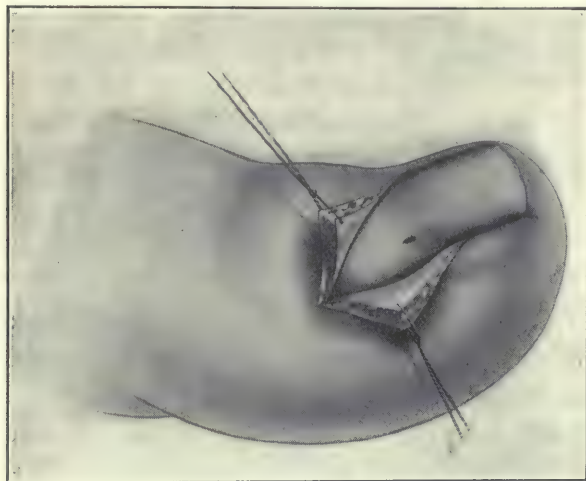


Figure 2.

untouched, but removes a portion of the matrix on the affected side and the nail either in part or entire. The operation as presented at the Brooklyn Surgical Society in 1904, has been in use by several of us at the Brooklyn Hospital since that time with what we consider better results than are obtainable by other methods.

The steps of the operation are as follows:

1. A rubber catheter is firmly tied about the base of the toe to serve as a tourniquet. The nail fold and the nail bed are rendered anesthetic by

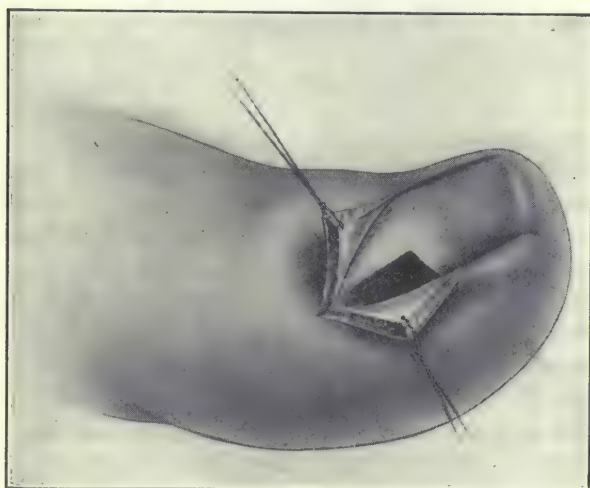


Figure 3.

the use of one-fifth of 1 per cent. solution of cocaine in normal salt solution.

2. The incision is made from the angle of the nail on the side of the disease, obliquely upward

and toward the side of the toe, as shown in Figure 1.

3. The nail is removed by blunt dissection with the handle of the scalpel, care being taken not to damage any more than possible the underlying nail bed. The outer portion of the matrix is removed entire, retracting the flaps wider and going well down along the side of the toe so as to be sure that none of the matrix is left to form later on irritating spikes of the nail.

Step shown in Fig. 3. The wound is sutured, the tourniquet removed and if the hemorrhage does not promptly cease the little cavity left by the removal of the matrix is packed for twenty-four hours with iodoform gauze.

The wound should heal in a week or ten days. The nail bed will have lost its sensitiveness before this time. The nail should grow in from six to eight weeks.

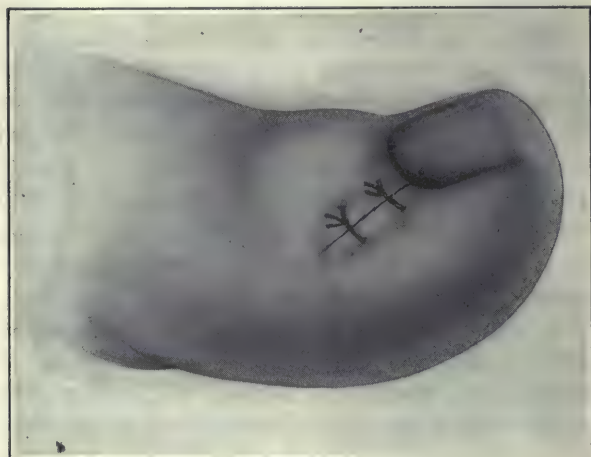


Figure 4.

This operation has the advantage that the nail will never grow again upon the side from which the matrix has been removed and that when once the source of irritation has been removed the nail fold is able to care for itself without surgery through infected tissues.

164 HALSEY STREET.

A PLASTER AND IRON SPLINT.

Deffenbaugh describes the treatment of fracture of the shaft of the femur by long flexible galvanized iron splints, one inch and a half wide, and sufficiently long to reach from the waist to a little below the external malleolus. This split is attached to the outer side of the leg, and plaster bandages are applied over it. Deffenbaugh claims for this method that it is easily procurable, cheap, affords the best form of immobilization by plaster-of-Paris.—W. B. DEFFENBAUGH, *Journal of Missouri State Medical Association*.

SCAR TISSUE—ITS PREVENTION AND OBLITERATION.*

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A scar on the surface of the body is usually objectionable. The fear of a scar will often seriously influence the selection of the surgeon for an operation, other considerations to the contrary.

The operative technic outlined in this paper, while generally recognized as good surgery, has not been universally followed with the specific object in view of lessening the formation of dense fibrous connective tissue in the wound. Since there has been no specific object in view, or reasons for its employment, other than given above, there has been no unanimity in its adoption as far as the writer has been able to discover, either in hospital practice or in medical literature.

The post-operative treatment of wounds given here has been used only in a restricted sense for preventing scar tissue formation; just enough to establish some precedent for its use in the broader field of surgery here recommended. The contents of this paper are based upon a wide clinical experience of sixteen years' duration in which the formation of dense fibrous connective tissue in the wound was lessened or prevented.

The operative technic, aside from aseptic technic, materially affects the process of healing. It is this special technic with which we will deal in describing the methods of preventing, in a great degree, dense fibrous connective tissue formation in the wound.

A scar is the result or completion of the process of repair. When the process of repair is accompanied by *irritation* from any cause there is a resulting tendency to the formation of new dense fibrous connective tissue or scar tissue in the wound.

The absorptive powers of the tissues, the constriction they will tolerate by the sutures without necrosis, the subsequent swelling, handling of the wound, irritation with antiseptics and surgical dressings, or the hardening of clots, etc., must all be taken into consideration in eliminating irritation in the wound during the process of healing.

The writer believes there is dawning on the horizon of surgery an era where scar-free surgery will

be practiced as faithfully and conscientiously as aseptic surgery is to-day.

That all irritation cannot be kept out of the wound is apparent from the nature of the case; but clinical experience proves that it can be reduced in all cases. In the majority of cases it can be reduced to such an extent that there will be little or no dense fibrous connective tissue following the wound.

The advantages of scar-free technic of wound treatment are:

1st. From a cosmetic point of view traces of the wound are minimized and often apparently obliterated.

2nd. There will be less tendency to the formation of dense fibrous connective tissue in the wound, consequently, less cause for pain or deformity.

3rd. There will be less tendency for that stubborn neoplasm of the fibroma type, known as keloid, to make its appearance.

SKIN INCISIONS.

Skin incisions should always be made with the object in view of permitting an exact approximation of the skin edges during wound closure.

In making the skin incision, the scalpel should be long and sharp, and should enter the skin at an acute angle. To do this, the scalpel is laid flat against the surface to be incised, and then tilted slightly towards the cutting edge, so that the flat side of the instrument makes an angle of 60° with the perpendicular.

The skin incision is made preferably with one downward sweep of the instrument. This divides the skin in such a manner that one flap of the wound has a very thin edge and rests on the other on the principle of a trap door. This enables a very accurate approximation of the skin edges to be made during wound closure. In preventing the formation of scars, accurate approximation is the keynote of all successful operations; therefore, accurate approximation in all wound closures, even at the sacrifice of normal tissue, must be followed.

Accurate approximation with no equivocation is the cardinal principle to which all other considerations are subservient. In removing a section of the skin for any cause, the plain of the incisions should incline at an angle of about 30° with, and on opposite sides of, the perpendicular, making the skin incisions approximate on cross section a triangle with its apex downward. This does not remove the appendages of the skin under the incision, but cuts through the ducts in such a manner that upon wound closure epitheliation is taking place in the line of the wound itself. Clinical experience does not in-

* Read at the regular monthly meeting of the Academy of Pathological Science, January 22, 1909.

dictate that pyogenic microorganisms which are supposed to be, at times, in these ducts or glands, give rise to infection if the surface is properly cleansed, but that the epithelia from these ducts spread out sufficiently in some instances so as to macroscopically obliterate the wound.

It is preferable to lengthen the incision in the healthy tissues on opposite sides, making the wound in the form of an oval, or preferably, an elongated ellipse, rather than a circular form, for a circular incision is not readily closed with accurately approximated edges.

The rules for healing contractures of the skin flaps should be scrupulously followed. The best operative results, as pertaining to the scar, are obtained where the skin is loosely attached to the underlying tissues, as in operations in the fold of the elbow, or knee, or for the removal of bags under the eyes. Where the skin is more adherent to the deeper structures, as over the deltoid muscle or on the cheek, it is more difficult to cover denuded areas with exact approximation during wound closure; although with the precautions given later, the surface of the body is usually operated anywhere with impunity, with little or no scar following.

When an incision is made in adipose tissue, as after the operation for the reduction of a double chin, a horse hair drain is inserted at the lowest part of the wound and should remain for 24 hours. The drain is for the purpose of removing the liquid oils and fats that accumulate in the wound, which will undergo fermentation unless removed. When a drain is used, a single loose stitch is placed at the drain opening. This is not tied until the drain is removed.

There must be little tension on the skin sutures. In operations on the face, mattress or staple stitches of No. 1 plain gut are placed subcutaneously. Shepherd's crooks are now placed in either end of the wound, and the skin edges are approximated accurately with No. 1 silk and No. 9 surgeon's needle. A knot is never allowed to remain over the line of incision. The stitches are very close to the edge and one-eighth of an inch or less apart. The catgut sutures take the tension. The skin sutures merely hold the skin in approximation. With proper tension on the skin sutures there will be no constriction anemia or sloughing in the skin edges, and the capillary hemorrhage will be controlled. After the wound is closed, there is more or less oozing for about 24 hours. This oozing should be protected from dust floating in the air, for the serum offers a fine culture medium for bacteria.

It is not desirable to put gauze on the face to catch

the seepage, and clots must not be allowed to form, for reasons given later. To protect the wound, it is sealed with flesh colored silk isinglass plaster. This is removed in 24 hours, when it is found that all clotting of blood that occurs during the interval comes away with it. In removing the plaster, it is a good plan to moisten it with a warm solution of bichloride of mercury 1-10,000. This will soften the plaster and allow its easy removal. The plaster is so removed that there will be no tendency to lift up the thin edge of or to pull the open wound. The wound is now thoroughly cleansed of all clots and exudations with warm bichloride of mercury, 1-10,000.

On other parts of the body the stitches need not be placed so close together. If infection occurs put in a drain, and treat it as a suppurating wound, in the usual manner. After the pus has cleared, it is treated in the following manner. The step, after the wound is closed, is most important, and has a range of application in nearly all branches of surgery, where the reduction of dense fibrous connective tissue is of paramount importance.

WOUND DRESSING TO PREVENT DENSE FIBROUS TISSUE FORMATION.

A proper understanding and application of the principle of wound dressing to prevent scar tissue formation is one of the unique features of facial surgery. A proper dressing should be used, when possible, in all branches of surgery where the integrity of the skin has been interrupted. Kirk's handbook of Physiology says: "The clotting of blood is due to the development in it of a substance called fibrin, which appears as a meshwork of fine fibrils. This meshwork entangles and encloses within itself the blood corpuscles. The first clot, therefore, includes the whole of the constituents of the blood in an apparently solid mass, but soon the fibrinous meshwork begins to contract and the serum that does not belong to the clot is squeezed out. When the whole of the serum is transuded, the clot is found to be smaller, but firmer and harder, as it is now made up chiefly of fibrin and blood corpuscles." If there is no coagulation, there is no fibrinous contraction enclosing blood corpuscles. In other words, in wounds where the skin edges approximate accurately, and where coagulation does not take place there will be:

1st. No fibrinous contractions of clots of blood over the wound.

Then from this cause there will be:

2nd. No interference with the epithelia spreading from the edges to cover the wound, which they will do, more or less if the wound is unirritated.

3rd. No plugging of the ducts of the sudoriferous and sebaceous glands with clots to interfere with the proliferation of epithelia from these sources.

4th. No irritation to the wound.

5th. Since dense fibrous connective tissue is caused by irritation there will be no dense fibrous connective tissue.

6th. Hence no contractions.

7th. No pain.

8th. No deformity.

9th. No keloids.

Most scars that result from a superficial injury are caused directly from blood clots that were allowed to form over the wound.

Kirk also says: "Coagulation is hindered or prevented by the application of oil." The technic of this third step of the operation is, to gently wipe away all oozing at every dressing and keep the wound immersed in some heavy non-irritating oil. Cold cream is used on the face. This prevents the clotting of blood and therefore of irritation to the wound from this cause, and therefore the formation of hard cicatricial tissue. The wound is kept immersed in this oil until healing takes place.

Never put a bandage on the face. On the other parts of the body not exposed, it is the practice to spread on the gauze covering the wound a mixture of beeswax and vaselin, one ounce to the pound. These are melted separately and mixed. The wound is covered with sterile vaselin, and the mixture on the gauze is laid over this. The heavy mixture keeps the vaselin from being absorbed by the dressing, and eliminates the irritation caused by the gauze adhering to the wound, of clots forming in the ducts of the skin appendages, a source from which epithelia should spring to cover or bridge over the denuded area. This dressing is cheap, easily sterilized by heating, keeps well and absolutely keeps blood clots from forming.

The treatment here described is not without precedent, however, for it is the exception to-day to find a face with small-pox pittings. This is due largely to the application of oil, which is almost universally used during the progress of the disease. The successful treatment of burns is that of oil. The success of the featural surgeon's treatment of wounds has been largely that of carrying out this oil treatment of wounds to the limit of possibilities, in this direction.

Wounds should be dressed in oil daily to keep them absolutely free from blood clots. The stitches should be removed as early as possible, for they act as foreign bodies, and set up irritation. The surgeon should use his judgment in this matter, basing it on

the tension originally needed to close the wound properly. Where the skin is loosely attached to the underlying tissues, and there is little or no tension needed in wound closure, or where the skin sutures are merely employed to approximate the skin edges, they may be removed in five days. After the wound is healed, should there be any scar, it is treated as a scar.

For the purpose of removal all scars are divided into three classes, depending upon the amount of dense fibrous connective tissue they contain. This classification is arbitrary, and is made for convenience in referring to them, for example:

Scars that come under class 1 contain only loose fibrous or myxomatous connective tissue. They follow deep injuries where the wound has been comparatively free from irritation from any cause. These scars are objectionable only from a cosmetic point of view, and are removed by plastic operation.

Scars of the second class occur after superficial injuries. They contain myxo-fibrous and a small amount of dense fibrous connective tissue. These scars are objectionable from a cosmetic point of view and are removed by carbolic acid.

Scars under class 3 contain only dense fibrous connective tissue, they follow deep injuries, where irritation is maintained in the wound, and this is the class of scars that is so objectionable from every point of view. They are unsightly, painful, and often result in keloids.

Between these various classes there are scars that contain an intermediate amount of dense fibrous connective tissue, one class merging into the other. The diagnosis and treatment of any class of scar must be based on experience and judgment that can only be acquired by wide clinical observations.

The class of scar depends, in a very great degree, upon the depth of the injury received to produce the scar. So, in a given scar, we are able to tell, in a degree, the depth of the injury.

Epidermization or repair of the epidermis is brought about by:

1st. Proliferation of the epithelia around the wound margin.

2nd. Proliferation from any part of the Malpighian or lower layer of the epidermis that may be left.

3rd. Proliferation from the skin appendages, the sebaceous and sudoriferous glands.

The sweat and oil glands usually penetrate below the epidermis into the derma or true skin, and if it is desired to select an arbitrary point below which there can be no regeneration of the epidermis,

we must select a point below this zone. For the sake of reference, we will call this the *epithelial zone*.

We shall define a superficial injury as one not deeper than the epithelial zone.

A deep injury is one occurring below the epithelial zone.

When the process of healing after a superficial injury is not interfered with in any way, the proliferating epithelia spreads over the denuded area without a resulting scar. If, however, the process of healing is interfered with, either by organized blood clots forming over the area of the wound, or irritation is maintained in the wound by the dressings or by faulty operative technic, etc., the formation of dense fibrous connective tissue will result and will interfere with the spreading of new epithelia from the epithelial zone. The result is, therefore, a conflict between the proliferating newly formed epithelia, and connective tissue cells. Around each duct, as a focus, new epithelia make their appearance. Between these a little dense fibrous and myxo-fibrous connective tissue is observed and the surface becomes irregular. This is a scar of the *second degree*.

Following a deep injury, healing takes place in a very different manner. There is no zone from which epithelia spring to cover the denuded area as in superficial injuries. The epithelia needed to cover a deep wound must come from the periphery. This they will do if the wound is kept free from clots, by being dressed in oil. They will creep in from the edges, and at times cover quite a large surface of denuded area. In a deep wound there appears to be a limit to the distance the epithelia can traverse inward from the edge. When they do not meet the epithelia from the opposite side, the space between must heal by granulation.

The best result following a granulating surface is obtained if the integument over the site of the injury remains soft, flexible or pliable. Even extensive deep wounds will tend to, and often do, heal in this way if unirritated. The scar will then be of the *first class*.

Deep wounds, of small external area, if unirritated, will often heal by the epithelia bridging over them from the edges with no perceptible scar remaining, as after needle punctures. When there is irritation in a deep wound, there is a tendency to, and there usually does, form only dense fibrous connective tissue, or a scar of the *third class*.

Irritation may frequently be kept out of a deep wound to such an extent that there will be no dense fibrous connective tissue present whatever.

Infection is one of the chief sources of irritation in a wound. Irritation is maintained in a wound by too great a tension of the skin sutures, causing constriction anemia, and a cutting into the tissues.

Irritation is maintained in a wound when there are insufficient skin flaps, for during the process of healing, and the contractions and swellings that follow, there is too great a tension on the sutures. This will set up an irritation that will cause a proliferation of new dense fibrous connective tissue.

During wound closure there are times when it is only possible to obtain enough skin flap to close the wound, and not sufficient to keep the wound closed during the contraction that takes place during the process of healing. Under these conditions good results have attended the application of ice and glycerine temporarily. These will tend to reduce the inflammation until primary union takes place.

Whenever there is even a small amount of tension on the skin sutures adhesive plaster is placed on either side of the wound, and the two flaps are drawn together by means of tape, laced in holes in the edge of the plaster.

Irritation is also maintained in the wound by improper selection of the size of the sutures, or in attempting to control bleeding points with ligatures when other means would answer the purpose equally well. The ends of the vessels and ligatures left in a wound will act more or less as foreign bodies and set up an irritation in the wound. Irritation is maintained in the wound by improper handling, by bruising or wiping the tissues; by the dressings becoming adherent to the wound, and the consequent removal of healthy granulations at each dressing, or by rubbing of the dressings. Irritation is again maintained in the wound by the too long or too strong use of antiseptics. Immobilize the parts when muscular action will interrupt the adhesive process during the progress of repair. Irritation also occurs in the wound by the formation of blood clots over the incision.

A clean incision with a sharp scalpel causes the least amount of irritation. Closing a wound promptly causes less irritation than where the wound is exposed to the air for a longer period of time. Irritation is maintained in a wound by blunt dissection, or a tearing of the tissues. In a wound of this nature an anastomosing of the smaller vessels, nerves, etc., is not so liable to occur as when the wound is incised with a sharp instrument.

While it is not possible to keep irritation out of the wound from all of these several sources, yet it is possible for us to endeavor to keep it out, and by

so doing reduce the relative amount of dense fibrous connective tissue.

When a wound is septic in character stimulation of the tissues is often necessary. This is always at the risk of stimulating the connective tissue cells to the proliferation of new dense fibrous connective tissue in the wound.

The oil treatment is universal in its application to all wounds and granulating surfaces, and should be employed wherever possible.

The pink color, characteristic of newly formed dense fibrous connective tissue, is due at first to the newly formed cells, and later to the irritation set up by the contractions that invariably occur, in direct proportion to the amount of dense fibrous connective tissue present in the wound.

SCARS UNDER CLASS ONE.

Scars under class one contain only loose fibrous or myxomatous connective tissue. They are flexible, pliable, and free from pain. The covering is thin, transparent, skinny, and often slightly adherent to the deeper tissues. Tiny vessels are often seen coursing through them. They follow deep burns, surgical operation, or deep injuries, where a considerable area of the epidermis has been removed and when the wound has been comparatively free from irritation from any cause. These scars are only objectionable from a cosmetic point of view. Scars of this class are removed by plastic operation.

Proscribed skin incision for the removal of scars under class one do not produce the best operative results. Very often considerable ingenuity, obtained by experience, will have to be displayed in selecting the form of incision that is best adapted to the individual case, in allowing the wound to close without the edges on either end forming bunches or buckles of tissue between the skin sutures.

Generally speaking, the incision should be an elongated ellipse, or oval shaped, with more or less pointed ends. Even if it should require two or three operations to remove the surface desired.

With a sharp scalpel an incision is made around the scar, about a line's breadth into the healthy skin. An edge of the enclosed skin is carefully dissected loose with a sharp scalpel, care being taken to cut close to the skin. When the area of the skin is large, and it is apparent that we will not be able to approximate the skin edges properly in one operation, we must resort to either one of two methods of procedure, viz: the plastic flap method of wound closure, or making the removal a two stage operation. In the plastic flap operation a sharp scalpel is run under the skin on each side of the wound up to

two inches, to suit the needs of the case, loosening it from the deeper structures. This will often allow the skin to stretch sufficiently to be drawn over quite a large surface of the denuded area.

When the area is too large to be covered by this method, we must resort to the two, and sometimes three, stage operation, that is, removing one-half of the scar and allowing it to heal, then removing the other half at another sitting. The dressing of this wound is the same as that for the prevention of dense fibrous connective tissue formation. Very often, in scars of this class, the principle objection lies in the fact that its surface is crossed throughout by bright red bloodvessels. These vessels may be obliterated, and the whole color of the scar changed by the use of the Galvanic needle.

SCARS OF THE SECOND CLASS.

Scars of the second class occur after a superficial injury. They contain myxo-fibrous and a small amount of dense fibrous connective tissue. Dense fibrous connective tissue is the direct result of irritation.

In a superficial wound we can eliminate many of the sources of irritation that would likely occur in a deep injury.

For practical considerations the main sources of irritation in a superficial wound may be reduced to:

- 1st. Blood clots.
- 2nd. Dressings.

THE ACTION OF THE BLOOD CLOT ON THE WOUND.

When the whole of the serum is squeezed out, the clot is found to be firmer and harder. The corpuscles enclosed by the fibrin, the firm, hard part, is sealed to the wound surface by the serum. That the blood clot is the main source of irritation to a superficial wound is born out by the fact that practically the only superficial injury that results in a scar is that over which a blood clot is allowed to form. When a blood clot is not allowed to form, by dressing the wound with the beeswax and vaselin preparation, there will be no scar following a superficial injury. The serum which often soaks in the gauze dressing and causes it to adhere, is a contributing factor to the irritation.

Scars of the second class result from:
Smallpox.

Acne vulgaris.

Superficial scratches.

Burns of the first degree.

Improperly dressed surgical wounds, and any kind of superficial ulcerations.

For the removal of scars of this class carbolic acid is employed.

REMOVAL OF SCARS UNDER CLASS TWO.

The U. S. Dispensatory says:

"Carbolic acid in the liquid form is locally, powerfully irritant and anesthetic, and applied undiluted to the skin causes a sharp pain followed by numbness, and accompanied by a whiteness of the surface due to the coagulation of albumen. It produces a superficial caustic effect." When an undiluted application is made to the skin the superficial layer or corium becomes necrosed or destroyed.

The albuminate formed by the action of pure carbolic acid on the tissues protects the deeper structures, acting as a wall or barrier checking deeper penetration, thus making its action superficial and therefore not liable to be absorbed. It is on account of these peculiar properties that it is singularly adapted as a destroyer of superficial tissues, such as scars under class two. If it is applied continuously, the penetration is deeper, the granular and mucous layers are broken down and more or less dense fibrous connective tissues will result, unless the precautions given under the "Technic of its Application" are rigidly followed. After a single application it leaves a local redness or hyperemia of the skin lasting six or eight weeks.

The application of carbolic acid for the removal of each of the scars above mentioned, is practically the same. It is the aim to remove all the superficial tissue in and around the scar. Often it is necessary to make two and sometimes three applications, the second and third following as soon as the one preceding it becomes dry, and this remains for three days before the dressing is applied.

TECHNIC OF THE APPLICATION OF CARBOLIC ACID FOR THE REMOVAL OF SMALLPOX PITTINGS ON THE FACE.

A small pledget of cotton on an ordinary cotton carrier is dipped in pure liquid carbolic acid, the acid is applied to the scar and skin immediately around it. The surface becomes lighter, the whiteness depending on the amount of acid used. When this becomes dry, one or two applications are made directly to the scar itself. The aim is to get the most acid where the fibrous connective tissue is the densest, and the lesser amount where the skin is practically normal. It is necessary to have some acid over the adjacent normal tissue, so there will be no sharp, well defined line of demarcations between the part the acid touches and the part where the acid does not touch. In smallpox pitting the whole face is covered with the acid uniformly, care being taken to keep it from the eyes, as the upper lids are covered with the acid. The outer edges,

where there is no pitting, as on the neck and ears, are blended in the manner above described. Of the technical points that justify the procedure the most important concerns the dressing that is used after the application of the acid.

When the acid becomes dry, the whole area is covered with adhesive plaster. This is cut with the scissors so that it presses on every part of the skin where the carbolic acid has touched. This plaster is removed in from two to three days depending on the depth of the scar tissue, or, in other words, on the depth to which we wish the suppuration to extend, although on tender babies' skin, it is the custom to remove it in twenty-four hours. When the adhesive plaster is removed, the epidermis comes with it. The surface is in active suppuration, that is, covered with pus. This paradoxical procedure of the surgeon, purposely causing pus, is so diametrically opposite to the surgeon's orthodox creed, that it may seem like the concrete essence of boldness. This is boldness, but it is boldness born of expert experience extending through many years, covering thousands of cases. That it is opposed to textual teaching is well known and carbolic acid gangrene is often seen in hospital practice to substantiate the wisdom of this teaching. But actual demonstration in the use of carbolic acid on the face in the manner described, stands above all theory or logical demonstration, for not a single case has been reported where gangrene of the face followed the application of the acid in this manner, and it is being used continuously, and has been for sixteen years.

When the plaster is removed, the surface is thoroughly cleansed with bichloride of mercury 1-10,000, and no watery solution is again applied. From this time on the beeswax and vaselin preparation is kept constantly applied, till the skin assumes a normal texture. From the epithelial zone new skin spreads rapidly, till, at the end of six or eight weeks, the normal color of the skin appears minus the scar.

The perfection of this method of removing scars has been paved with law suits, owing to the refusal of the patient to believe that the discolorations caused by the carbolic acid were only temporary. But, invariably, when the physicians have succeeded in having the case postponed for three months, it has been thrown out of court, for by this time the discoloration has disappeared as well as the scars.

SCARS UNDER CLASS THREE.

Scars under class three contain only dense fibrous connective tissue. They follow deep injuries, where irritation is maintained in the wound, and are the

class of scars that are so objectionable from every point of view. A recent cicatrix of this class is redder, firmer, less pliable and less yielding than the surrounding parts. After a course of time it becomes flexible, pliable, and easily movable, losing its adhesion to the fascia and bone in many cases. It often assumes a pearly whiteness.

Scars under class three contain no papillæ, nerves, lymphatics, muscular, or glandular tissue.

They may be either level with the adjacent tissue, elevated or depressed.

If the technic given in this paper for the keeping out irritation of deep wounds is followed there will always be a markedly less amount of dense fibrous connective tissue. Under favorable conditions this is practically negative. Cases are numerous where there is no dense fibrous connective tissue whatever. A thin line scar is easily removed by carbolic acid.

REMOVAL OF SCARS UNDER CLASS THREE.

Scars of this class may be removed by operative procedure, as are scars of class one, but, in class three, the incisions are deeper. The incision should go through the skin and must be wide enough to include all of the dense fibrous connective tissue, and deep enough to allow the skin to be drawn over it. The deeper tissues are not so elastic as the superficial, and consequently the difficulties in accurately approximating the skin edges are greater. The sliding flap method of wound closure must often be used, and the two stage and sometimes three stage method of operation must be resorted to. The dressing of the wound is the same as after all the surgical operations.

This operation is often followed by a depression, especially if the scar is extensive. When this is so, the hollow may often be filled to the required level with paraffin, but this is a subject that will not be discussed at present.

There are a number of adjuvant treatments that will materially aid us in lessening the amount of dense fibrous connective tissue in a scar, even though it be of long standing, which will greatly improve its appearance.

In scars of the third degree that are raised above the surrounding skin surface, it is the practice of many, and especially of those who are not physicians, and therefore not allowed to treat them surgically, to burn off the superfluous dense fibrous connective tissue with nitric acid, or in some instances with aqua-regia. Ordinary bicarbonate of soda is employed as a controlling agent after the application of the acid to prevent deeper penetra-

tion. The wound is kept immersed in oil till healing takes place, when the resulting scar is found to be soft and minus fibrous connective tissue.

In a small scar of the third degree, as from a stitch, or a line scar, the treatment of carbolic acid as described above is all that is necessary in many instances to completely obliterate it.

In removing a scar, one will often encounter the peculiar phenomenon of not being able to sear the skin with the carbolic. I have applied pure carbolic daily for six days, and covered each application with adhesive plaster, with no evidence whatever of the acid on the skin except a slight hyperemia. The reason for this is that the scar had been previously soaked in oil. It is well to pause here and state that before applying carbolic acid for the purpose of searing or blistering the skin, the skin should be previously thoroughly cleansed with green soap, ether and alcohol, for the purpose of removing the oils and fats that prevent the acid from attacking the skin. In a big scar it is the custom to apply pure nitric acid to the scar for about five seconds, then apply bicarbonate of soda in the powder directly to the acid, then dress in oil in the manner already described.

Denuding a scar and the adjacent skin by carbolic acid and dressing it with oil allows the epithelia to spread out over the scar from the periphery. After a line scar has been treated with the acid, and the application of oil is being made, it is very beautiful to see the skin gradually bridging over the line from the edges first in one place, then in another, and so on till the whole scar is covered with new epithelia. If in any place the epithelia fail to completely bridge over the denuded area from each side, blister that place again and treat with oil in the same manner. Linear scars one-quarter of an inch or more in width are greatly improved, and scars one-eighth of an inch or less in width have apparently been obliterated.

Scars of the third class are poorly nourished. In time the bloodvessels in the immediate vicinity cause more or less absorption of the dense fibrous connective tissue, and the scar becomes softer. The absorption may be hastened by causing a mild congestion around the scar in the immediate vicinity.

The galvanic current will do much towards softening and absorbing dense fibrous connective tissue. Dr. William Harvey King says: "The treatment consists of a combination of negative punctures and dry cupping. First, all the contracting edges should be punctured with a fine needle connected with the negative pole. We depend as much upon the cos-

metic effect by the setting free of bubbles of hydrogen, etc., to break up the tissue, as we do upon the formation of new tissue. After a scar has been scarified in this way, a dry cupping instrument is placed over it and slight suction made. This is for the purpose of drawing blood to the parts, which increases the size of the vessels, and consequently increases the nutrition to the parts. At first this treatment may be given once a week or even oftener, and as the scar improves, the intervals may be lengthened until once in three months may be sufficient to keep the scar thoroughly suffused with blood."

The writer uses massage, vigorously applied, after electricity, with good results. There have been reported numerous examples where vibration alone has succeeded in causing dense fibrous connective tissue to be absorbed.

PREVENTION OF KELOIDS.

In all newly formed dense fibrous connective tissues, as in scars of the third class, contractions take place, often causing pain. In many instances these contractions are of sufficient force as to cause the inelastic connective tissue fibers to separate. In many cases where irritation is maintained in the wound, the formation of dense fibrous connective tissue does not stop at the point necessary for complete union, the normal balance in the different tissues comprising the structure around the wound is disturbed, there is a hypertrophy of connective tissue, a new growth of the fibroma type, or what is commonly known as a keloid.

After a complete excision of a keloid, there is often a recurrence. Following the excision, there is a formation of new dense fibrous connective tissue and there are the same conditions prevailing then that were present before the excision, contractions taking place as before, and we say that there is a recurrence of the keloid.

The amount of dense fibrous connective tissue there is in a scar is in direct proportion to the amount of irritation there was in the wound, and, as keloids have their origin in dense fibrous connective tissue, keloid formation, will be in the same relative ratio.

Dr. William Harvey King says: "In hypertrophic cicatrices (keloids), Drs. Derville and Becue in a number of cases have had good results from the static spark. The seance lasts from five to ten minutes, and is repeated every fortnight. Three or four treatments in recent cases bring about softening and a diminution of elevation."

In the writer's mind, fibrolysin has given good results when injected in the immediate vicinity of

dense fibrous connective tissue. It improves the scars perceptibly, as regards both the color and texture. In six cases the cicatricial tissue became softer, and when coupled with massage, it approached, in about two months' time, a scar of the first degree.

This preparation is put up in ampules containing thirty-five minims. The contents of one of these ampules is hypodermatically injected daily. After the second or third injection, a perceptible change is noticed taking place in the scar. In the hands of others, it has succeeded in having marked effect upon keloids.

One case that illustrates the effect of fibrolysin is that of an extensive keloid that followed a burn, and was reported by Dr. Robert T. Brennan, of the New York Polyclinic, some weeks ago.

E. D., aged sixteen years; occupation, delivery boy; family history negative; personal history, has had the customary diseases of childhood, otherwise well. Christmas Day, 1905, the patient was impersonating Santa Claus; he was dressed in the usual apparel for such a part, including a long white beard. During his masquerading the false beard somehow caught fire, and before he could extinguish the flames and remove what was left of the beard, he was terribly burned. The patient was taken to Flower Hospital for treatment, and was dismissed cured two months later. He was brought to Dr. Bodine's clinic in November, 1907, for the removal of the tissue that had formed from the burn. A diagnosis of keloid was made and injections of fibrolysin recommended.

Fibrolysin is a solution of thiosinnamin and sodium salicylate. One tube is used at each injection. The injection is made into the tumor itself, with an ordinary Pravaz syringe. The injection can be made as often as necessary. In this case one was made each week until twenty-four had been given, with the following results: *The keloid tissue sloughed, broke down and ulcerated, and what remained was absorbed.* The injections given in this case were quite painful.

Long before thiosinnamin was used, it was known that sodium salicylate taken internally, had a marked effect in the resolution and absorption of dense fibrous connective tissues. It is used now internally by many oculists when dionin is instilled into the eye, to absorb scars following corneal ulcers. A good method of administering sodium salicylate is in from twenty to thirty grains in an aromatic solution, from three to four times a day. But when the patient is taking thiosinnamin, we do not give it, as it is one of its ingredients.

The above is often alternated every other week with potassium iodide, grs. x after meals.

The technic outlined in the paper is particularly adapted to the treatment of stumps. It is the writer's experience that if it is used there will be little

dense fibrous connective tissue in the stump, not sufficient to cause contractions enclosing nerve filaments, consequently no post-operative pain from this cause, nor keloids. Pain does not always, but frequently, occur in a stump. When pain, without pressure, does occur in a stump, it is on account of the dense fibrous connective tissue present. The technic outlined in this paper tends to reduce the amount of dense fibrous connective tissue in the stump, and makes it possible for the patient to use an artificial limb earlier.

BURNS AND SUPPURATING SURFACES.

It is not the province of this paper to speak of the treatment of burns, except insofar as it applies to the prevention of dense fibrous connective tissue formation, but as the treatment of burns is almost analogous to the methods employed for other purposes described in this paper, a slight digression is made in this direction.

It is pointed out above that the action of pure carbolic acid is anesthetic and superficial, and that the albuminate forms a barrier preventing deep penetration, and when it is applied in the manner given below, absorption may be considered negative. If carbolic acid is applied undiluted to a burned surface on a small cotton swab and followed in about five seconds by alcohol in the same manner, it will take away the pain from a burn immediately and permanently. After this keep the wound immersed in oil.

The oil treatment is particularly well adapted to suppurating surfaces. It is recommended especially, aside from the fact that it prevents clotting, and consequent irritation from this cause, because the beeswax and vaseline preparation lends itself readily as a medium for holding or conveying to the surface any medicinal preparation the surgeon may desire, or think necessary in the individual case. A thin, oily medium is not as well adapted for this purpose as the beeswax and vaseline preparation for the thinner oils, as vaseline, for example, melt at the temperature of the body, soak into the dressing, and allows them to adhere to the wound.

The old familiar caron oil, that is so universally used in hospital practice, would answer the purpose very well, if there were added to it during the first few days of its administration, or until after the pus had disappeared, the medicinal preparations spoken of above. Then, if it was applied properly and often enough, better results, as regard to dense fibrous connective tissue, would in all probability follow.

A preparation that has given good results in the hands of the writer may be made at a very small

cost, and may be used in all cases of burns and surgical dressings for septic wounds, consists of:

Beeswax	1 to 2 oz.
Ichthyol	1 dr.
Balsam of Peru	1 dr.
Pulv. Alum	½ dr.
Petrolatum, q.s., ad.	1 lb.

The beeswax and vaselin are melted separately and mixed. When cool, the other ingredients are then mixed in thoroughly.

Apply to cheese-cloth or lint and lay lightly over burn, dress twice daily till the pus disappears.

Under this treatment the pus will usually disappear in from two to four days. After the pus has disappeared, dress in the plain beeswax and vaselin preparation daily until the red discoloration disappears.

Never put an antiseptic or a stimulating preparation or a healing agent in contact with a healthy granulating surface, for the vital forces of the patient that were sufficient to cause the healthy granulation to appear, are sufficient to heal the wound properly if irritation is kept out of the wound by the application of oil.

Never put anything on a wound but oil, in the manner above described, unless it is known to be unhealthy.

NERVE SUPPLY.

In all operations we should direct our attention to the muscular and cutaneous nerve supply. In operations on the abdomen this is especially true, since over this broad abdominal expanse there are no bony prominences except on the periphery, to give support to the enclosed area. The continuity of these parts is maintained only by the integrity and tone inherent in the tissues themselves.

Cutting the nerve supply robs the tissues of tone, nutrition, and stimulus, and often is the direct cause of the horrible herniæ we see at times following abdominal operations.

These nerves are often so small as to escape even a diligent search. It is not within the province of this paper to go into the manner of distribution of these nerves, but will only mention two of the larger ones that are at times encountered in the lower abdominal operations. The ilio-inguinal and iliohypogastric.

In conclusion, the writer would like to state that the technic of wound treatment given in this paper in no way interferes with aseptic technic, and when the two are used in conjunction, he believes there will be a nearer approach to the ideal toward which we all are striving.

AN ELECTRICALLY LIGHTED PHARYNGO- SCOPE. A NEW METHOD OF EXAM- INING THE NASO-PHARYNX AND LARYNX.

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Electric illumination of the pharynx is not a new procedure. Many instruments have been devised to give a better view of the posterior nares, Eustachian tubes and vault of the pharynx, among which may be mentioned the salpingoscope, electric tongue depressor and "cystoscope." All of these instruments have had but limited application.

The salpingoscope, for the inspection of the Eustachian orifices, was tried by many otologists and rhinologists but the image presented was not accurate and no exact pathological study could be made with it. The electric tongue depressor, especially the one in which the light is enclosed in a glass sheath, gives an excellent view of the oral cavity, but examination of the posterior nares with it is difficult unless the patient holds the instrument while the operator manipulates the post-nasal mirror. A modification of the cystoscope for use in the oro-pharynx and naso-pharynx was brought to the attention of the medical profession a few years ago. The instrument fell into disuse because its manipulation on the tongue gave rise to considerable gagging and closed off the naso-pharynx.

The technic of examination of the naso-pharynx and larynx by the ordinary mirrors is more or less of a simple procedure to one particularly trained in rhinological and laryngological work. However, even the most expert admit that examinations in this manner are not complete and that but a glimpse is obtained, particularly of the posterior nares and Eustachian tubes. Pathological studies of these parts have been impossible unless they have been well cocaineized, and then the pathological picture is changed. Symmetrical examination of both sides of the naso-pharynx and of both Eustachian orifices has never met with any success; for the small post-nasal mirror admits a picture which is proportionately small. Adenoids, particularly in children, have been diagnosed mainly by finger examination, but a study of the adenoid, *in situ*, has not been possible.

On account of this difficulty in ascertaining the direct relationship of the various parts of the naso-pharynx, especially the Eustachian tubes, the author was led to devise the instrument described below (an earlier model of which was presented before

the Otological Section of the N. Y. Academy of Medicine, April 9, 1909, and briefly described in the *New York Medical Journal* April 17, 1909).

THE INSTRUMENT.

The instrument consists of a vertical and a horizontal shaft joined (by screw-thread) in the manner indicated in Figure 1.

The vertical shaft serves as a handle and contains the wires for attachment to a Wappler Controller or other rheostat by which the current is regulated. These wires escape, as a cord, at the base of the shaft, which is flanged to provide a secure grasp. At its upper end the vertical screws into the horizontal shaft.

The horizontal shaft consists of a tube, bearing the optical apparatus, and, on each side, an electric

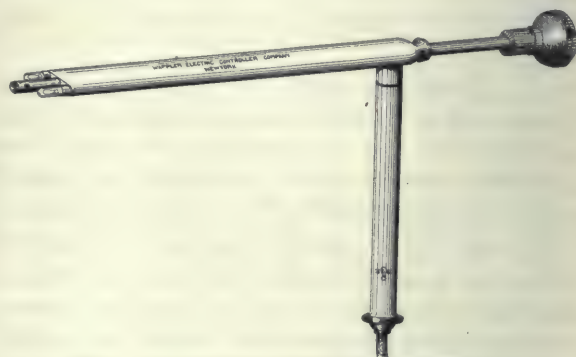


Fig. 1. The Improved Electric Pharyngoscope.

wire carrier, terminating, respectively, in a small, water-tight, tipless electric lamp. The inner two-thirds of the horizontal shaft is enclosed in a metallic sheath, so that a flat surface rests upon the tongue. The optical apparatus is the same as was devised for Otis' cystoscope. This telescope can be removed from its tube for cleansing. When the telescope is inserted the full distance, the lens, which has a focal distance of an inch to an inch and one-quarter, lies between and somewhat beyond the two lamps, and the eye-piece projects about three inches beyond the shaft. On the circumference of this eye-piece is a small metal ball to indicate, by its position, the direction in which the lens is at any time rotated.

The instrument is not sterilizable by heat, but, like the cystoscope, it is readily disinfected by pure phenol, followed by alcohol, or by formaldehyde. It may be carried in a tube containing formalin tablets.

THE INTRODUCTION.

The instrument is introduced like a tongue depressor. The patient is told to open his mouth wide, to breathe regularly and deeply and to keep the muscles relaxed. The pharyngoscope is carried

in until the end containing the lens is about one-sixteenth of an inch from the pharyngeal wall. (See Figure II.) The tongue is depressed, and the instrument is held firmly in place. Under no circumstances should it now be moved, for by so doing a reflex action occurs which entirely occludes the naso-pharynx. As soon as the instrument is once in position, the patient is told to *close his mouth* firmly over it and to breathe deeply through the nose. (See Figure III.) The muscles of the pharynx are thereby relaxed and the naso-pharyngeal space is widened.

When the lens points upwards (as indicated by the ball on the outer end of the instrument), an ex-

cumulation of increased saliva, caused by the presence of a metallic instrument. If there is any gagging, cocaineization of the posterior pharyngeal wall is all that is necessary.

THE IMAGES.

The views obtained with the pharyngoscope are somewhat different from those seen with the mir-



Fig. 4. Schematic Picture of the Naso-pharynx as Seen With the Pharyngoscope. (1) Adenoids; (2) Uvula; (3) Middle Turbinate; (4) Inferior Turbinate; (5) Septum; (6) Eustachian Tubes.

rors now in use because the angle from which the view is taken is different. For example, in examining the naso-pharynx with the electric pharyngoscope, the posterior aspect of the uvula is enormous in comparison with the size of the posterior nares. (Figure IV.) As was suggested to the author, the same error is presented as one gets on looking at a high building from the street. In other words, the parts that are furthest away from the lens appear

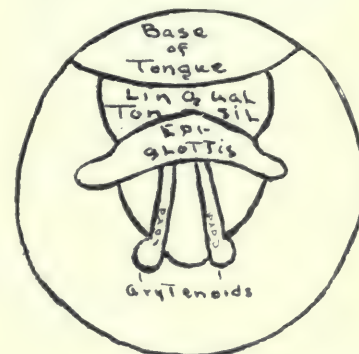


Fig. 5. Schematic Picture of the Larynx and Surrounding Parts as Seen With the Pharyngoscope.

Fig. 2. Correct Position of the Pharyngoscope in Open Mouth. Note That the Tip is Behind the Uvula.

Fig. 3. Method of Inspection of Pharynx or Larynx with Mouth Closed. The Eye of the Examiner is Brought Close to the Eye-piece of the Instrument.

cellent view of the vault of the pharynx is obtained. By slightly depressing the handle, the posterior nares come into view. By rotating the eye-piece to the left or to the right, one can see either Eustachian tube with the Eustachian prominence and Rosenmüller's fossa. Any pathological condition of these parts is readily appreciated. A Eustachian catheter is easily seen *in situ*. In narrow throats both Eustachian orifices can be seen at the same time. By rotating the eye-piece until the ball points down, the larynx comes into view, with the epiglottis overhanging it, and the lingual tonsil and base of the tongue anterior.

In the majority of instances, the patient's throat does not have to be anesthetized. An examination which lasts from ten to twenty minutes is not provocative of more discomfort than that due to the ac-

smallest. The Eustachian orifices also seem misplaced, as they appear nearer the vault than they actually are. When one inspects into the larynx, he looks *on top* of the vocal cords. The epiglottis, lingual tonsil and base of the tongue seem magnified and the larynx itself small in comparison. (Figure V.) This reduced image of the larynx is,

however, an advantage to the extent that we see the vocal cords at rest, as well as in motion, and the pyriform fossæ and other surrounding structures come into the picture. After a few examinations

hanging the tube, and a second adenoid situated directly over the upper portion of the septum. (Fig. VI.)

CASE II.—Male, age 40, has been suffering from

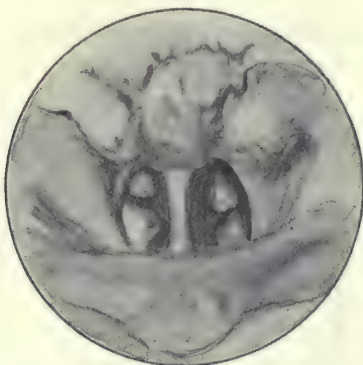


Fig. 6. Adenoids in the Pharyngeal Vault and Covering the Left Eustachian Tube. (Drawn by Dr. Percy Fridenberg.)

one easily accustoms himself to the various images and orientation needs but a little practice.

About fifty individuals have thus far been examined, some having normal throats and others presenting various abnormalities; among which were adenoids, hypertrophied turbinates, deviated septum, pathological conditions of the Eustachian tubes, various forms of pharyngeal catarrh, sinus disease with mucus in the vault, hypertrophied lingual tonsil, acute laryngitis, chronic laryngitis, etc. The examination in almost every instance, was easy.

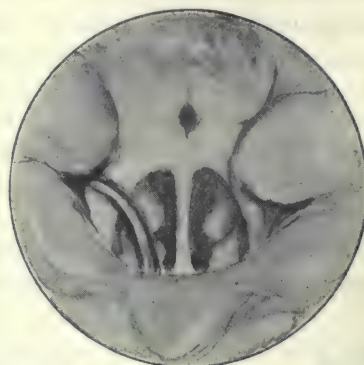


Fig. 8. Showing the Eustachian Catheter in the Right Eustachian Tube. (Drawn by Dr. Percy Fridenberg.)

tenacious mucus in the pharyngeal vault for two years. Examination with the pharyngoscope showed hypertrophied lymphoid follicles in the pharyngeal vault. (Fig. VII.)

CASE III.—Female, age 30, had an acute catarrhal condition of the middle-ear. Examination with the pharyngoscope showed congestion of the Eustachian orifices. (Fig. VIII.) The illustration is produced to show the Eustachian catheter in place, indicating the high position of the Eustachian orifices.



Fig. 7. Granular Pharyngitis With Hypertrophy of the Lymphoid Follicles in the Vault of the Pharynx.

For purposes of demonstration it was often continued for twenty minutes.

ILLUSTRATIVE CASES.

CASE I.—Female, age 24, came to the New York Eye and Ear Infirmary suffering from a chronic middle-ear catarrh. No definable cause in nose or throat, had been found. The left Eustachian tube could not be entered. Examination with the pharyngoscope showed an adenoid extending from the left Eustachian prominence and directly over-



Fig. 9. Irregular Nares. Hypertrophied Turbinates. Deviated Septum. Adenoid Tissue in the Vault. Adenoids Obstructing Eustachian Orifices.

CASE IV.—Male, age 18, had a catarrhal condition of the nose and throat for three years. Examination with the pharyngoscope showed a deflected septum, hypertrophied posterior ends of the turbinates, and adenoid tissue in the vault and over both the Eustachian tubes. (Fig. IX.)

CASE V.—Female, age 20, with normal larynx. (Fig. X.) The illustration shows the apparent hypertrophy of the lingual tonsil and epiglottis. A distinct view of the anterior commissure is not obtained.

CASE VI.—Male, age 50, had acute laryngitis. Congestion of the parts was plainly seen with the pharyngoscope. The true cords were of a deeper hue than normal and the false cords and arytenoids very red. The false cords were plainly seen (Fig.



Fig. 10. The Larynx With Cords Abducted. Note the Apparent Hypertrophy of the Lingual Tonsil. (Drawn by Dr. Percy Fridenberg.)

XI) and on deep inspiration, the anterior commissure came plainly into view.

ADVANTAGES.

The examination of the entire throat by means of the electric pharyngoscope has many advantages over the examinations made by the ordinary instruments. *But one instrument is needed for a clear view of the vault of the pharynx, Eustachian tubes, posterior nares, and the larynx, and adjacent parts.* There is *but one introduction* of the instrument, which is held in substantially the same position throughout the examination of posterior nares,



Fig. 11. The Larynx With Epiglottis Raised in Inspiration. Note How Plainly the Anterior Commissure Can Be Seen. The False Cords Appear as Thickened Bands.

pharynx and larynx. The patient remains *in repose*, with *his mouth closed*, and is able to breathe easily. For examinations of the larynx, it is unnecessary for him to protrude his tongue.

The illumination of the field is excellent. The electric lights are of the high standard used in cystoscopes which admit a fairly strong current and

are absolutely water-tight. They do not get hot, but just warm enough to prevent condensation of moisture on the lens. There is no more distortion of shades of color than is encountered with the ordinary head mirror.

One decided advantage of the pharyngoscope is that a view of the entire part to be examined comes into the field at one time; therefore, a careful comparison of the right and left sides, say of the posterior nares, can be made.

The pharyngoscope can be used in children for the examination of the pharyngeal vault, posterior nares and larynx. If the instrument is once in place, the struggles of the child make comparatively little difference, provided the head is held by an assistant. For the examination of these parts in an adult patient who is in bed or unconscious, the pharyngoscope is ideal.

In its present form the instrument is mainly adapted for diagnostic purposes. Treatment through the nose can be instituted if the instrument is held by the patient himself. I hope within a short time to have an attachment ready for catheterization of the Eustachian tubes under the guidance of the eye, in much the same manner as ureter catheterization. Other improvements now in progress, including a thumb switch on the handle, will be published later.

Without the able assistance and advice of Mr. R. Wappler it would have been impossible for the author to have perfected the instrument. He takes this occasion to thank him and also to express his appreciation to Dr. Percy H. Fridenberg for the illustrations he has made.

11 WEST 91ST STREET.

THE SURGICAL TREATMENT OF "UNRESOLVED PNEUMONIA."

Unresolved pneumonias, in my opinion, are rarely, if ever, medical cases, but are evidences of destruction of pulmonary tissue that require surgical treatment. It seems to me that an explanation of this condition may be somewhat as follows: First, the pneumonia follows its usual course; then, either a fresh infection or the pneumococcus taking on a pyogenic character, an abscess develops in or about the pneumonic area. This perforates into the bronchus, . . . or through the pleura into the pleural cavity, producing a general or a localized empyema. In cases where the pneumonic area lies close to the interlobar space, the abscess may be encapsulated in this region and may give the impression of a localized pneumonic area.—SAMUEL LLOYD in *The Post-Graduate*.

TREATMENT OF HABITUAL SCOLIOSIS BY PASSIVE AND ACTIVE CORRECTION.*

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The causes of habitual scoliosis are manifold, some of the most important and those most frequently met with are asymmetry of the head, asymmetry of the pelvis, short leg, and asymmetry of the spine itself. Asymmetry of the head is a factor not often taken into account. Ocular defects, causing improper balance of the head, are an obvious cause. Asymmetry of the pelvis, as described by Barwell, is accounted as a not infrequent cause of asymmetrical positions. The shortness of one leg is so common that it fails to attract the attention that it deserves. Asymmetry of the spine itself and unequal thickness of the vertebral bodies on the right side as contrasted with the left is a demonstrated condition.

All these defects of conformation must lead to some lateral deviation of the spine. It depends upon the individual whether these are taken care of by nature in some compensatory way, or whether they cause a deviation notable enough to be classed as deformities.

Aside from the structural defects causing asymmetry and consequent lateral curvature are to be found the faulty postures resulting from attitude and occupation which must be accounted another important factor in producing lateral deviation. Habitual lateral bed postures curve the spine. By favoring the growth of the spine on one side and retarding it on the other, there is a tendency to fix a lateral curve by establishing physical changes in the bones, ligaments and muscles. The twisted position in writing as generally practiced is more frequently than anything else a predisposing cause of many lateral curvatures. Playing the violin in the usual position, sitting in narrow school desks on one side, carrying school books on one hip or in one hand, pains on one side of the trunk caused by furuncles, abscesses, lumbago, contusion of chest wall, pleuritis and intestinal troubles, sports, such as tennis, fencing, golfing, etc., and trades as that of the carpenter, etc., have no doubt contributed to bringing on lateral curvature. Other similar causes might be enumerated, but the aforesaid will suffice to look for these and related conditions in examination.

I claim that the cause of habitual scoliosis lies in the loss of equilibrium of the long muscles of the back (*erecti spinæ*). As in the above-mentioned examples, lateral curvature develops because of under activity of one side of the muscles of the back, so also can we hope to correct the lateral curve by strengthening the muscles on the opposite side. This does not pertain to those cases alone where one sided muscular activity is the cause, but is also of primary importance to all other cases of scoliosis regardless of origin; because the strength of the *erecti spinæ* muscles on the convex side is the only latent power in the back which can correct the scoliotic spinal column. The muscular strength on the convex side is surpassed by that on the concave because of continued inactivity of long duration extending in some cases over a period of several years. Through the entire convex curve, the distance between the origin and the insertion of the *erecti spinæ* muscles is greater, and the muscles having accustomed themselves to this position become too long; their contractile power is lost. The opposite is true of the muscles on the concave side, these muscles retaining the pathological scoliotic spinal column. This difference in the contractile power of these two sets of muscles may be easily proved by the lifting of weights.

At first sight an operation to shorten the muscles on the convex side seems to be one to be considered, yet the flat muscles of the back themselves are not adapted to this operation and the necessary fixation of the trunk after the operation for a period of from 6 to 8 weeks undermines the muscular system of the youthful body to such an extent that, as a rule, this operation is not resorted to. Thus the only method to employ is that of localized gymnastic exercise by which muscular fiber is strengthened and increased, thereby improving lost contractile power and the physiological function of the muscles, at the same time making the spine more flexible by overcorrecting exercises and holding the spine in the improved position between treatments. The most important and sole purpose in the treatment of every case of scoliosis, no matter what the cause may be, is the strengthening of the muscles on the convex side by gymnastic exercises. This therapy is sufficient in cases where no rigidity or deformity have developed and fortunately in a large number of cases which come under the observation of the physician this stage of the disease has not developed. If rigidity and transformation of the *vertebræ* are present, it becomes necessary to relieve the rigidity as far as possible, which is caused by the contraction of the ligaments on the concave side. This last

* Read before the Surgical Section of the Southern Medical Association, November 12, 1908.

step, and most tedious, is to endeavor to transform the deformed vertebræ into normally shaped bones.

It is a well established fact that weak trunk muscles are strengthened by gymnastic calisthenic exercises and the more complicated exercises on rings, horizontal and parallel bars, stall bars, orthopedic gymnastic plinth, etc. Drooping head, shoulders and otherwise faulty carriage in children, due to weak muscles, can be corrected in a general course of exercise at a gymnasium without the attention of a specialist, and in a short time an erect and firm carriage is attained. Also patients afflicted with a slight curvature are materially benefited by a general gymnastic course of exercise in so far as the back is strengthened and the inclination to speedy fatigue and to lateral drooping is overcome, but that a well defined case of scoliosis can be cured by a general course of gymnastics is out of question. If my assumption is correct, that is, if the muscular strength on the convex side is insufficient to maintain the erect position of the spinal column, in other words, when a permanent lack of symmetry exists, it becomes evident that a general course of gymnastic exercises is insufficient. *A uniform development of the left and right erecti spinæ muscles will not alter the disproportion. A rational treatment aims at a one-sided development of the weaker muscles of the convex side.*

Sayre's suspension apparatus has been extensively used in connection with gymnastic exercise. During suspension most scoliotic cases show an encouraging improvement of the curve and great results were expected from this simple treatment. But suspension does not influence the muscles, it does not alter the already mentioned disproportion and its use is of such relatively short duration that it has no corrective effect on the scoliotic spinal column. It must be admitted, however, that suspension has a beneficial effect in loosening the shortened ligaments and muscles on the concave side.

The attempt has been made to render the temporary effect of the suspension permanent by applying the plaster jacket, orthopedic corset, etc., while the body was suspended by the head and the scoliotic condition corrected as far as possible. I now enter upon the most difficult and at the same time most frequently disputed point in the treatment of scoliosis. Prominent orthopedic surgeons use the plaster jacket or orthopedic corset in the treatment of almost every case of scoliosis, and other authorities, as for example the prominent Dr. Schulthess, a leading authority in the treatment of scoliosis, opposes most emphatically the plaster jacket or orthopedic corset.

I readily see that by means of a closely fitted plaster jacket, such as employed by Wullstein, enclosing trunk, neck and head, a corrected position is attained, but by its use the harm done to the muscles of the back, to internal organs and to general health of the patient is much greater than the good derived from it. In recent years many physicians have adopted the use of the adjustable orthopedic corset made of leather, celluloid or plaster, etc., in place of the non-adjustable plaster jacket on account of the unfavorable results above mentioned, though the corrective effect is not as permanent as that of the non-adjustable jacket, because the patient, left to adjust it himself, will not attain the corrective effect as accurately.

As before stated, in all scoliotic cases a disproportion exists between the muscles of the left and right sides of the back. The important point is, to strengthen those sets of muscles which will correct the scoliotic condition, thereby re-establishing the equilibrium. To attain this result the treatment is based upon principles which may be taken under the following heads: (1) The stretching of the shortened ligaments and muscles on the concave side by *active assistive* and *passive* exercises. (2) To strengthen and shorten the muscles and ligaments on the convex side by *active resistive exercises*; (a) How best to maintain the improved position.

The best way of stretching the shortened ligaments and muscles on the concave side is by means of *active assistance* and *passive* exercises with the necessary apparatus such as rings, pulley-weights, stall bars, Schmidt's suspension apparatus with exercise, plinth, etc., relieving the rigidity of the spinal column. In order to obtain the best possible results from this mobilizing and stretching treatment it is necessary to produce a fixation of the spine in its corrected position at all times when the patient is not doing the correcting exercises. This is best done by letting the patient sleep in an orthopedic bed (by Lange) where head and hips are fixed between pommels and the curves are over-corrected by means of belts. I have found this method satisfactory in every case in which the bed has been used. During the day when not exercising the patient must wear a brace (by Schlee) which holds the body and head in the corrected position. This is the *passive corrective* part of the treatment. Though a staunch believer in the value and efficiency of exercise in scoliosis, I have come to the conclusion that the improved spinal column as the result of a medical gymnastic treatment, must be fixed in a supporting and correcting apparatus between treatments.

(b) The most efficient way to strengthen and shorten the muscles and ligaments on the convex side is by *active resistive* exercises with and without medical gymnastic apparatus. I prefer the active resistive exercises to the purely active exercises for this part of the treatment because the physician is better able, either by his own resistance or that of the patient's to strengthen and shorten the affected muscles in a more localized and direct manner. I have found it necessary to use the supporting apparatus during this part of the treatment also until the muscles are sufficiently strengthened to maintain the spinal column in a normal position.

(c) After removing the supports, the improved position must be always maintained while sitting, standing or lying. The best possible posture is to be maintained while sitting, whatsoever the occupation of the moment may be. It is most readily obtained by sitting with the sacrum loins, dorsum and shoulders well supported against the back of the chair, which should be moulded to the normal shape of the spine. Standing at lessons or any other occupation should be avoided when possible; when unavoidable the patient ought to stand on both feet with heels three to four inches apart. Standing on one foot is most injurious, as it at once throws the spine in a serpentine position. A short leg may be compensated by a thicker sole. As the time spent in sleep is from one-third to one-half during the growing period a proper bed posture is an important factor.

LIGATION OF THE COMMON ILIAC ARTERY UNDER UNFAVORABLE CONDITIONS—A CASE REPORT.

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Mrs. Margaret M., a patient of Dr. H. W. Curtin, was 50 years of age on her admission to St. Mary's Infirmary. She gave a history of perfect health, with uneventful menopause at 42, and no injury save a blow on the right hip or upper part of thigh about ten years ago. Ten months ago a small mass made its appearance in Scarpa's triangle, near the spot of the former injury. In about six months it had grown to the size of an adult head and was removed by a competent surgeon. There was immediate recurrence, so that in six weeks a second tumor of nearly the same size had to be removed. The incision for this operation never healed, and at the time of the patient's ad-

mission to the hospital there was a large protruding mass of granulation tissue lying upon a very large tumor which extended well beyond Poupart's ligament. There was a secondary growth of nearly the same size within the abdomen.

Hemorrhages from the ulcerating surfaces having become frequent and of such serious degree as to endanger the life of the patient it was decided to shut off the principal blood supply by ligation.

Under chloroform anesthesia by Dr. Curtin, with the assistance of Drs. E. H. Oehler and W. U. Kennedy I opened the abdomen to tie the iliac artery, since the position and size of the external tumor were such as to prohibit ligation of the femoral—which, also, would not have checked the growth of, or hemorrhage from, the intra-abdominal mass.

When the abdomen was opened the neoplasm was found to be much larger than it had seemed to be, extending far down into the pelvis and beyond the median line—so that access to the iliac was impossible. However, rather than abandon the woman to her fate, it seemed best to try to reach the artery. Therefore, with digital compression of the abdominal aorta as a temporary preventive of fatal hemorrhage, the peritoneum over the cancer was split and the contents (encephaloid) scooped out to the amount of about two quarts. This permitted such collapse of the enveloping structures as to allow the common iliac to be reached. The space thus provided, however, was so limited that an aneurism needle could not be employed; so a common, large, sharp needle was passed around the iliac one inch from the bifurcation of the abdominal aorta, and the vessel was tied with No. 4 catgut. Dr. Kennedy announced immediate cessation of pulsation in Hunter's canal and the popliteal space; but the leg did not become seriously blanched nor perceptibly cold. A second ligature was placed about a half inch external to the first. Then the remainder of the pelvic growth from the depths and the rent in peritoneum and pelvic fascia sewed up, there being no oozing after ligation of the artery. The abdomen was closed without drainage.

Considerable oozing still continued from the ulcerated surface. Search showed a large pulsating vessel swinging up from the lumbar region through the sheath of the vastus externus. This was cut down upon and found to be as large as an ordinary lead pencil. It was ligated, and bleeding instantly ceased from the sloughing surface; also the entire leg almost immediately turned pale and its surface gradually became cold.

Up to this time there had been no great amount of shock; the patient's pulse and color were good.

So I decided—although this had not been planned—to excise the huge necrotic mass. Hasty work gave us most of the tumor with only a trifling loss of blood; but within that five minutes the radial pulse disappeared and the face gave evidence of most profound shock. The patient was quickly removed to her bed and all remedies usual to combat surgical shock applied.

The subsequent history was peculiar. Although hypodermatoclysis was twice used with nearly a liter of fluid each time and strychnin and spartein were given to the limit no radial pulse could be detected at the end of twenty-four hours; and not a drop of water could be secured from the bladder! Nevertheless the patient had slept some hours and expressed herself as feeling very comfortable. The right leg was mettled and cold from toes to hip.

She died 30 hours after operation, of prolonged shock—since the anuria (which was complete) could hardly have caused death so early; and the pulse had never returned at the wrist.

It is a matter of regret that I was tempted to remove the growth at Scarpa's triangle, for it was this work which caused the shock. Ligations of the common iliac are so comparatively rare that the future course of arterial supply to the lower extremity would have been interesting to note, especially after ligation of the huge anastomatic vessel, which evidently came from one of the lumbar.

The reason for ligation of the common iliac rather than the external was that the latter vessel was so involved in the carcinomatous growth that it could not be reached and isolated.

PENETRATING WOUND OF THE ABDOMEN WITHOUT SYMPTOMS; A CASE REPORT.

CHARLES H. JAEGER, M.D.,

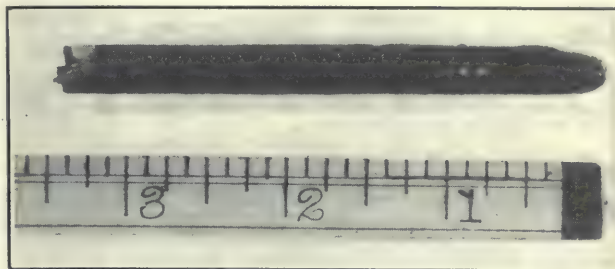
Instructor in Orthopedic Surgery, College of Physicians and Surgeons; Chief of Orthopedic Department, Vanderbilt Clinic, etc.,
NEW YORK.

The patient was a boy thirteen and one-half years old. He states that five months ago he fell from a bicycle. He suffered no inconvenience from his fall and the only injury noticed was a small abrasion of the skin on the abdomen in the region of the right groin. This scratch had never healed but soon became slightly swollen and three weeks after the accident it began to discharge pus. This discharge has continued ever since in moderate amount. The boy does not remember having had any pain in the hip or spine, and comes for relief of the sinus and deformity.

Physical Examination.—Well nourished boy of average height. He walks with marked limp and the body is curved markedly to the right. The right leg is flexed.

Examination of the leg reveals flexion deformity of 45° of right thigh. Considerable psoas spasm. Leg movable in abduction and adduction. Spine is held to the right by strong muscular spasm.

There is a small sinus in the right groin which admits a probe to the depth of two and one-half inches, the direction of the sinus being toward the



Photograph of the Pencil Fragment.

median line and backwards. Palpation is negative. An x-ray picture shows nothing abnormal.

Diagnosis is withheld. The boy is to remain under observation, and for relief of psoas spasm a short plaster of Paris spica is applied. He comes for dressing of the sinus every two days. Two weeks after first seeing the boy, when the gauze dressing was removed, a dark object was seen filling up the mouth of sinus. This quickly slipped up out of the mouth of the wound and was found to be a fragment of lead pencil three and one-half inches long. Three days later the discharge was slight and all other symptoms had disappeared. In two weeks the sinus had ceased discharging and wound was healed.

My explanation of the case is that the pencil had penetrated his right psoas muscle and was held there by muscular spasm. The plaster spica relieved the spasm and permitted the foreign body to be discharged.

471 PARK AVENUE.

AMERICAN MEDICAL EDITORS' ASSOCIATION.

The coming meeting of this Association, to be held at the Marlborough-Blenheim Hotel, Atlantic City, June 5th and 7th, celebrates its fortieth anniversary, and an unusual programme has been prepared for the occasion.

It is expected that delegates from the foreign medical press will be present and every medical Editor should make an effort to meet with this Society.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, MAY, 1909.

ADDITIONS TO THE TECHNIC OF SKIN GRAFTING.

Recent surgical literature contains two promising contributions to the technic of skin grafting. The first of these concerns a method of local anesthesia for the removal of the grafts, and is described by Dr. Gunnar Nyström, of Stockholm, in *Zentralblatt für Chirurgie*, January 30, 1909. He secures a large field of anesthesia on the outer, anterior aspect of the thigh by percutaneous infiltration at that point, just within the anterior superior spine of the ilium, where the lateral cutaneous femoral nerve escapes from the pelvis. For the purpose he uses 4 to 5 ccm. of a one per cent. solution of novocain, to which there are added five drops of adrenalin solution, 1 to 1,000, to each 10 ccm. The injection is made first just internal to the spine, then below it, at various depths in the subcutaneous tissues, some of the fluid being deposited under the fascia lata.

To provide a suitable means of holding the (Thiersch) grafts in position, without interfering with the escape of secretions or the retention of the grafts when the dressing is changed, has been a perplexing problem. A single layer of gauze is sometimes applied directly to the wound beneath the absorbent dressing, but it is too adherent to be ideal. Gutta-percha strips or perforated silver foil may be used, but these threaten the viability of the grafts by maceration. The "open method" of treat-

ment, which consists in applying no dressing over the wound, is inapplicable to all ambulant and to many recumbent cases. In *Annals of Surgery*, March, 1909, Dr. John Staige Davis, of Baltimore, describes a method of splinting skin grafts which would seem superior to any hitherto suggested. It consists in the immediate application of a coarse meshed net impregnated with gutta-percha. He uses a curtain net of loosely woven bars of cotton thread, surrounding openings about one centimeter in diameter. (Smaller openings become clogged.) After washing out the sizing and drying, the fabric is soaked in a twenty per cent. chloroform solution of pure gutta-percha until the chloroform evaporates. The stiffened fabric is sterilized by immersion in three changes of sublimate solution, 1-1,000, for twelve-hour periods and preserved in the same antiseptic. When needed, it is rinsed in saline solution and dried with a towel. A piece of the material large enough to extend beyond the grafted surface is pressed down evenly upon it. Any type of dressing may be applied over this, and Davis finds it particularly desirable when the surface is exposed to the air. With reasonable precautions in the removal of the dressings these may be changed as needed, he says, with little danger of displacing the grafts.—W. M. B.

A NOTABLE ADVANCE IN PHARYNGO- AND LARYNGOSCOPY.

Since the introduction of the throat mirror by Garcia, there has been no improvement on the method of examining the larynx, except direct laryngoscopy—a procedure of some magnitude, intended for special cases and altogether unsuitable as an office routine. Certainly, for the examination of the naso-pharynx there has been until the present time no progress beyond the use of the mirror,—a method often and notoriously unsatisfactory.

We greet now, as a distinct and notable advance, the instrument and method described by Harold Hays, briefly, in the *N. Y. Medical Journal*, April 17, 1909, and more at length in this issue of the AMERICAN JOURNAL OF SURGERY. The instrument is merely an adaptation of the indirect vision cystoscope; and the very simplicity of such an adaptation makes one wonder that it was not done before.

It is no small accomplishment that allows the deliberate study of clear and unobstructed images of the posterior nares and the Eustachian orifices, the pharyngeal vault, the larynx and perilaryngeal tissues, without discomfort to the patient or effort for the examiner, and with but a single introduc-

tion of a small instrument! The new method does away with the necessity for the often practised, painful digital examination for adenoids. It affords a means of making topical applications, through the nose or directly through the pharynx, under visual guidance. No doubt, too, as its author plans, it will admit of the attachment of Eustachian catheters to be introduced, under the eye, as we now insert ureter catheters.—W. M. B.

BIER'S VENOUS ANESTHESIA.

In the issue of November, 1908, we called attention to a method, devised by Bier, of producing anesthesia limited to one extremity, by the injection of a 0.5 per cent. novocaine solution into one of the principal superficial veins in an area between two constricting bandages. At that time there had been comparatively few trials of Bier's method, which, however, appeared so promising that we awaited with great interest the publication of fuller observations. This has come in a paper by Bier himself; in the *Berliner Klinische Wochenschrift*, March 19, 1909. It is based on experiences with 134 operations. While this number is still not very large, it is sufficient to serve as a fair index to the worth of the procedure, for it includes such diverse operations as amputations, resections, arthrodeses, arthrotomies, necrotomies, bone suturings, tendon transplantations, varicose vein extirpations, etc. Of these 134 operations, in 115 the anesthesia was reported successful, in 14 satisfactory and only five were unsatisfactory. When it is considered that of the five unsatisfactory cases, three occurred in children, a class of patients in whom any form of local anesthesia is attended with much difficulty, these figures appear still more favorable.

The method as now practiced is essentially as described in our earlier report. It need only be said that Bier lays much emphasis on the point that the extremity must be completely bloodless before the anesthetic is introduced. Poisoning followed in only two cases, and in both it was of a very mild grade. Bier warns against the use of more than 80 c.cm. of the solution and against sudden release of the constricting bandage. He mentions only one contraindication—arterio-sclerotic or diabetic gangrene. In three amputations for this malady, gangrene of the stump resulted. He believes that the gangrene was due to constriction of the limb and not to the effects of the anesthetic.

On the whole, this method appears to have a distinct field of usefulness and to go a long way in

solving the problem of anesthesia. Our only fear is this, that unless the technic is properly carried out, the method will acquire a disrepute which it may not deserve. We therefore advise surgeons who desire to take up this new form of anesthesia, to study the originator's directions with scrupulous care.—E. M.

Surgical Suggestions.

Local applications of tincture of iodine is one of the most satisfactory treatments for small chronic ulcers.

The surgeon should keep closely in touch with cases of acute retropharyngeal abscess as serious edema of the glottis may develop and require tracheotomy for its relief.

Not all soft swellings of the axilla are to be incised. Aneurism of the axillary artery has been mistaken for abscess.

The diagnosis of tuberculosis and cancer will make better progress when family history is utterly ignored.

When gas comes from an abscess which has been opened in some part of the abdomen, it must not be hastily assumed that the bowel is involved, as many of the abdominal suppurations are associated with gas-forming bacteria. This is notably the case with subphrenic abscesses.

The prognosis in tuberculous diseases of bones and joints in children has been improved more by the practical application of the fresh air treatment than by any other means. The next step in surgical enlightenment is to apply the same treatment to other surgical disease.

Patients who show a progressive loss of vocal power should be examined most carefully for an intralaryngeal condition. An acute aphonia may be due to an inflammatory condition or paresis of one cord; alcoholism, syphilis, tuberculosis and malignant disease bring on a chronic condition. Two most important causes of chronic laryngitis are thickening due to an old inflammatory process and the presence of a small, hard, nodular tumor on one of the cords, *e. g.*, fibroma.

Book Reviews.

Surgery of the Upper Abdomen. In Two Volumes. By JOHN B. DEEVER, M.D., LL.D., Surgeon-in-Chief to the German Hospital, Philadelphia, and ASTLEY PASTON COOPER ASHHURST, M.D., Surgeon to the Out-Patient Department of the Episcopal Hospital, Philadelphia. *Vol. I: Surgery of the Stomach and Duodenum.* Octavo; 468 pages; 76 illustrations. Philadelphia: P. BLAKISTON'S SON & Co., 1909. Price, \$5.00, net.

The surgery of the upper abdomen has so far advanced, its literature has so developed, that it is quite proper at this time to "take stock" of it—to eliminate what is unworthy of permanent record and to gather together harmoniously the accomplishments that are permanent or, for the present, acceptable. This is the task that these authors have undertaken, and part of their work is before us in the first of the two volumes in which the surgery of the upper abdomen will be presented. Volume I deals only with the stomach and duodenum, leaving the liver, bile-passages, pancreas and spleen for the second volume.

With a painstaking digest of a voluminous literature, are incorporated the personal observations of a surgeon of wide experience, always clear and forceful in the expression of his opinions.

In the first three chapters anatomy, physiology and general diagnostic considerations (physical examination, gastric analysis, skiagraphy, etc.) are respectively considered. Chapters IV to XIII, inclusive, deal with benign, malignant, inflammatory and traumatic affections of the stomach, duodenum and diaphragm. Chapter XIV (about 70 pages) is a concise description of the most important operations on the stomach and duodenum, of the preparation for operation and of general technic, and Chapter XV is devoted to the operative complications and sequelæ. To each chapter is appended a bibliography of the most important literature.

Perhaps the portion of the work by which one can best estimate the spirit in which it was undertaken is that dealing with the borderline condition, gastric ulcer. Here we find no surgical over-enthusiasm, but a sane consideration of statistical reports and a clear statement of the course to pursue. Concerning "acute," active ulcers, thorough-going medical treatment, to be continued for several weeks (sometimes even three months) is advised for all cases; but it is also pointed out that medical treatment often fails and that its cures are usually (various statistics quoted) not permanent. The authors fairly concede that the question of operation during an active hemorrhage from a gastric ulcer is in dispute, but they are in agreement with perhaps the majority in opposing this procedure. "We should feel," they say, "extremely loath to undertake an operation in cases such as these, where the chance of discovering the seat of the hemorrhage is so exceptionally slight, and where medical treatment offers a probability of cure in a fair proportion of cases." Again, concerning the excision of ulcers, its supporters and opponents are freely quoted, and the authors conclude: "So that while we admit in the abstract the force of some of the arguments advanced by the advocates of excision, it seems a saner course to limit the more dangerous operation to the more serious condition of acknowledged malignancy; and when there is doubt . . . to perform the more extensive operation only in carefully selected cases." Ulcers distant from the pylorus are regarded as "least unsuited for treatment by excision."

Surgical Diseases of the Abdomen, with especial reference to Diagnosis. By RICHARD DOUGLAS, M.D., Formerly Professor of Gynecology and Abdominal Surgery, Medical Department, Vanderbilt University, Nashville; Ex-President of the Southern Surgical and Gynecological Association, etc. *Second Edition,* revised and enlarged. Edited by RICHARD A. BARR, B.A., M.D., Professor of Abdominal Surgery, Medical

Department, Vanderbilt University. Octavo; 897 pages; 20 full-page plates. Philadelphia: P. BLAKISTON'S SON & COMPANY, 1909. Price, \$6.00.

The first edition of this work, 1903, was a masterly product of scientific critique, critical observation and excellent style. Douglas showed an unusual power of analysis and an ability to weigh theories and unproven data against clinical facts. His work was a delightful exposition of the diagnostics of surgical and borderland abdominal diseases.

In preparing this second edition Barr has preserved the original text, with only such changes as seemed to him to have been made necessary by the actual progress of the last few years. While we commend the editor's respect for the original, we believe that he has allowed it to make him too chary of making desirable additions. For example, in the section on *Appendicitis* we find no reference to Meltzer's or other recently developed signs. Nor do we find in the book an exposition of "Head's" hyperesthetic zones, so important in abdominal diagnosis. Also, if the blood count, pain, vomiting, diarrhea and other abdominal signs and symptoms were analyzed in separate chapters, the value of the book would have been enhanced.

Epoch-Making Contributions to Medicine, Surgery, and the Allied Sciences, Being Reprints of those Communications which first conveyed Epoch-Making Observations to the Scientific World, together with Biographical Sketches of the Observers. Collected by C. N. B. CAMAC, A.B., M.D., New York City. Octavo; 435 pages, with portraits. Philadelphia and London: W. B. SAUNDERS COMPANY, 1909. \$4.00, net.

In this most welcome and valuable compilation Camac has reproduced, and embellished with biographical notes and lists of writings, the following essays: 1. Lister's "On the Antiseptic Principle of the Practice of Surgery." 2. Harvey's "Anatomical Disquisition on the Motion of the Heart and Blood" (translation). 3. Auenbrugger's treatise "On Percussion of the Chest" (translation). 4. Laënnec's "Treatise on the Diseases of the Chest and on Mediate Auscultation" (translation). 5. Various essays of Jenner on the Variolæ Vaccinæ. 6. Morton. Two essays on Sulphuric Ether Inhalation. To which are added various letters, a communication from John C. Warren, a portrait of Horace Wells and Sir J. Y. Simpson's essay on Chloroform. 7. Holmes' essay on "The Contagiousness of Puerperal Fever." To this is added a list of the writings of Semmelweis, as a recognition of the man who suffered and fought for what Holmes had published earlier, but quietly and in a more or less obscure medical journal.

We are so apt to bow down to medical accomplishments stamped "made in Germany"! Is it not striking that five of these seven epoch-making contributions to medicine are Anglo-Saxon? And surely no one can quarrel with Camac at the inclusion of any of these seven in his compilation, albeit we cannot make a list of the epoch-making contributions without Paré's, Pasteur's and Koch's. And those of Virchow, Roux and Ehrlich might well be included also. The list could be extended, if one does not too strictly draw his definition of epoch-making contributors, to include Helmholtz, Garcia, McDowell.

Indeed, we believe that the profession would welcome a small library of volumes on the same plan as Camac's, reproducing or relating the important contributions to medicine of Vesalius, Malpighi, Morgagni, among the early anatomists, of Müller, Cooper, Bright, Langenbeck, Skoda, Esmarch, Thiersch, Sim, Senn, Murphy, Roentgen, O'Dwyer, Koller, Nitze, Lazear, Fitz and many others (of whom these are but scattered examples) whose contributions, not strictly epoch-making, were nevertheless "great."

While Camac's biographical and other notes are not lengthy, they represent several years of labor, for which he deserves much thanks. His book will be cherished in the libraries of all those to whom medicine is more than a vocation!

Clinical Diagnosis and Treatment of Disorders of the Bladder. With Technic of Cystoscopy. By FOLLEN CABOT, M.D., Professor of Genito-Urinary Diseases,

Post-Graduate Medical School; Attending Genito-Urinary Surgeon, City and Post-Graduate Hospital, New York. Duodecimo; 224 pages; 42 illustrations. New York: E. B. TREAT & COMPANY, 1909. Price, \$2.00.

There is need for a concise, practical, English treatise on cystoscopy and on the diagnosis of diseases of the bladder, but it must not be expected that a complete exposition of these subjects is crowded within the limits of the publication under consideration. In a small book of but 200 pages, in which a great deal of room is occupied by illustrations, the author merely outlines "the principal methods of diagnosing and treating disorders of the urinary bladder," including a discussion of the cystoscope and its uses.

Cabot describes the principal types of cystoscope. He indicates a preference for the direct vision instrument for ureter catheterization. His instructions in technic will be of help to the novice in cystoscopy, but the work is, of course, too elementary for those more advanced in the diagnosis of bladder disorders.

Nouveau Traité de Chirurgie. Publié sous la direction de A. LE DENTU et PIERRE DELBET. Volume XVIII. *Oto-Rhino-Laryngologie* par ANDRÉ CASTEX et F. LUBET-BARBON. Octavo; 601 pages; 215 illustrations. Paris: J. B. BAILLIÈRE ET FILS, 1909.

As indicated by the title, this volume deals with three special branches—otology and rhinology, written by Castex, and laryngology, by Lubet-Barbon. Castex has gone into the description of the accessory sinuses of the nose in great detail, as the increasing importance of these structures well merits. On the other hand, the mastoid operation deserves more thorough treatment than it has received. The non-specialist will be impressed by the enormous number of special instruments recommended (?) by the authors. The book is plainly written, so that the surgeon or general practitioner will find it of use.

The Therapeutics of Radiant Light and Heat and Convective Heat. By WILLIAM BENHAM SNOW, M.D., Author of "A Manual on Electro-Static Modes of Application, Therapeutics, Radiography, and Radiotherapy" and "Currents of High Potential of High and Other Frequencies"; Editor of the *Journal of Advanced Therapeutics*; and late Instructor in Electro-Therapeutics in the New York Post-Graduate Medical School, etc. Octavo; 119 pages; illustrated. New York: SCIENTIFIC AUTHORS' PUBLISHING COMPANY, 1909.

This is a condensed manual on the employment of radiant light and heat. Especial attention has been paid to physiological actions, practical indications, and methods. A chapter is included on the relative action of radiant light and heat and the Roentgen ray. Four chapters deal with the employment of convective heat, as showing the contrast and similarity of action and the differences and similarities of radiant and convective heat are indicated.

The typography is excellent and the text is well illustrated.

The International Medical Annual. A Year Book of Treatment and Practitioner's Index. Twenty-seventh Year (1908). Duodecimo; 683 pages; 111 illustrations and 44 plates. New York: E. B. TREAT & Co., 1909. Price, \$3.50.

This year's issue of the "Annual" gives a very comprehensive review of the advances made in all branches of medicine. The special branches, particularly ophthalmology and rhinology, are very fully dealt with. Abdominal surgery has several important articles devoted to results and new methods. The present volume is fully up to the standard of its predecessors.

Saunders' Pocket Medical Formulary. With an Appendix containing Posological Table; Formulæ and Doses for Hypodermatic Medication; Poisons and their An-

tidotes; Diameters of the Female Pelvis and Fetal Head; Obstetrical Table; Diet List for Various Diseases; Materials and Drugs Used in Antiseptic Surgery; Treatment of Asphyxia from Drowning; Surgical Remembrancer; Table of Incompatibles; Eruptive Fevers; Weights and Measures, etc. By WILLIAM M. POWELL, M.D., Author of "Essentials of Diseases of Children"; Member of the Philadelphia Pathological Society, etc. *Ninth Edition*, Thoroughly Revised, Enlarged and Adapted to the Eighth Revision (1905) of the U. S. Pharmacopeia. Philadelphia and London: W. B. SAUNDERS COMPANY, 1909.

The present edition contains a great many excellent formulæ, applicable to the commonest diseases. The appendix although not by any means complete, covers in a brief way points likely to be forgotten and necessary to be obtained at a moment's notice.

Backbone. Hints for the Prevention of Jelly-Spine Curvature and Mental Squint. A Straight-Up Antidote for the Blues and a Straight-Ahead Sure Cure for Grouch. Collected from various sources and arranged by S. DEWITT CLOUGH, Ravenswood, Chicago, December, 1908. Price, 50 cents.

A prettily printed publication; a chastening chirp of Chicago cheerfulness!

Books Received

Constipation and Intestinal Obstruction. By SAMUEL G. GANT, M.D., LL.D., Professor of Diseases of the Rectum and Anus in the New York Post-Graduate Medical School and Hospital, etc. Octavo; 559 pages; 250 original illustrations. Philadelphia and London: W. B. SAUNDERS COMPANY, 1909. Cloth, \$6.00, net. Half morocco, \$7.50, net.

Appendicitis and Other Diseases of the Vermiform Appendix. By HOWARD A. KELLY, M.D. Large octavo; 502 pages; 215 original illustrations (some colored) and 3 plates. Philadelphia and London: J. B. LIPPINCOTT COMPANY, 1909. Price, \$6.00.

Kreisgeschirurgische Rück- und Ausblicke vom asiatischen Kriegsschauplatze. Von DR. HERMANN FISCHER (Breslau-Berlin), Professor der Chirurgie, Geheimm. Medizinalrat. Octavo; 198 pages. Berlin: AUGUST HIRSCHWALD, 1909.

Les Eaux Minérales en Injections Hypodermiques. Premières Expérimentations. Par DR. ROGER TRÉMALIÈRES. Brochure; 24 pages. Paris: A. MALOINE, 1909. Price, 1 franc.

Children Who Need Not Have Been Blind. Prevention a Public Duty. A pamphlet dealing with some statistics of Ophthalmia Neonatorum and means of controlling midwives, etc., to prevent it. Issued by the COMMITTEE ON PREVENTION OF BLINDNESS OF THE NEW YORK ASSOCIATION FOR THE BLIND.

Twenty-Second Annual Report of the State Board of Health of the State of Ohio for the year ending December 31, 1907. Octavo; 375 pages; cloth.

Clinique Therapeutique du Practicien. Par les Docteurs H. HUCHARD, Médecin de l'Hôpital Necker, etc., et CH. FIESSINGER, Directeur adjoint de la Clinique du Cœur. *Deuxième Partie.* Octavo; 413 pages. Paris: A. MALOINE, 1909.

Les Régimes. Alimentation rationnelle dans la Santé et la Maladie. Par le Dr. F. DE GRANDMAISON. Duodecimo; 263 pages. Paris: A. MALOINE, 1909.

Progress in Surgery.

A Résumé of Recent Literature.

Intestinal Localization, Including Surgery and Surgical Anatomy of the Small Intestine. G. H. MONKS, Boston. *Journal of the American Medical Association*, April 3, 1909.

Monks describes the mesentery and its characteristics, with those of the intestines, in different portions of the bowel. The characteristics of the loop of bowels in the upper portion of the intestine and of the mesentery attached to it, are the thickness of the walls, the large caliber, and the great vascularity together with the numerous valves which can be easily felt through the walls. The attached mesentery, if there is not too much fat in it, exhibits large, long straight vessels radiating to the intestine from arches (principally primary) deep in the mesentery. Ordinarily the mesentery is liable to be thin and to show the vessels. On the other hand, the characteristics of a loop of bowel near the lower end of the small intestine and of the attached mesentery are its thinness, small caliber, moderate vascularity, and lack of valves felt through the walls. The attached mesentery has relatively short, small, tortuous vessels, which spring from secondary or even tertiary loops deep in the mesentery. There is usually also more fat in this part. The transition between the two is gradual, but the surgeon can approximate the localization. Monks illustrates the situation in a general way by a cut in which the part over the first horizontal line lodges the uppermost third of the small intestine. If the incision is in the upper part of the abdomen, especially in the middle line or to the left of it, any loop of small intestine the surgeon meets will belong probably to the uppermost third of the gut; if his incision is in the middle part of the abdomen or in the left iliac, the loops belong probably to the middle third, and finally, if his incision is in the right iliac fossa or to the right of the rectus muscle, or even in the middle line between umbilicus and pubes, the loops will probably belong to the lowest third of the intestine. Monks describes a method by which in cases in which the abdominal wound is large enough to palpate the mesenteric root we can learn the right direction of the bowel. The loop is drawn well out of the wound, and its two extremities held upward by the assistant, the axis of the loop being kept by him parallel to the known axis of the root of the mesentery. The surgeon's right hand is now applied to the loop in such a manner that his thumb is one side of the mesentery and his first two fingers are on the other. The thumb and fingers are then gently pushed downward in the direction of the root of the mesentery. If, by palpation of the mesentery, the surgeon detects no twist in it, he at once knows that the upper end of the loop (as it is then held) will, if followed up, conduct him to the duodenum, and that the lower end will conduct him to the ileocecal valve. If, however, there is a twist in the mesentery, the surgeon should withdraw his hand, remove the twist by turning the bowel, and examine again. When, finally, no twist remains in the mesentery, the surgeon knows that the end of the loop which is uppermost is the one which leads to the duodenum, and that which is lowest to the ileocecal valve. He describes also the procedure for protecting the intestines, when exposed outside the abdomen, by sheets of rubber, thus allowing the abdominal cavity to be more thoroughly inspected.

On the Question of the So-called Acute Post-operative Dilatation of the Stomach, with Observations on the Technic of Posterior Gastro-Enterostomy (Zur Frage der Sogenannten Akuten post-operativen Magendilatation nebst Bemerkungen zur Technik der hinteren Gastro-Enterostomie). G. AXHAUSEN, Berlin. *Deutsche Medizinische Wochenschrift*, January 28, 1909.

It has always been a debated point as to whether in

cases of post-operative dilatation of the stomach (gastro-mesenteric ileus) the dilatation is a primary condition or is the result of compression of the duodenum by the tense lower edge of the mesentery. Judging from observations in two cases in which an obstruction of the small intestine was found near the duodeno-jejunal angle, the author is led to believe that the dilatation of the stomach is in all probability not a secondary process, for in neither case were there present dilatation nor any of the attendant symptoms. In the first case, the obstruction was due to a band at the site of a gastro-enterostomy loop; in the second a tuberculous ulcer just below the site of a recently done gastro-enterostomy. The band in the first case arose from the slit in the transverse mesocolon; this, the author believes, can be prevented by suturing the edges of the slit to the anastomosing ring.

Penetrating Wounds of the Abdomen. FLOYD W. McRAE. *New York Medical Journal*, March 13, 1909.

1. In civil practice every suspected penetrating wound of the abdomen, under favorable conditions of practice, should have the benefit of wound tracing.
2. When the wound proves to be penetrating, an exploratory laparotomy should be done at once, and visceral damage excluded or repaired as far as practicable.
3. There is far less danger from wound tracing than from probing or from masterly inactivity, while awaiting positive evidence of visceral damage requiring operative interference.
4. Local toilet with moist sponging for cleansing is better than free peritoneal irrigation.
5. When in doubt it is safer to drain.
6. Operations done within two hours should not give a mortality over twenty-five to thirty per cent., within four hours over forty per cent., within six hours over fifty per cent., within eight hours over sixty per cent., and within twelve hours over seventy per cent.
7. After twelve hours' expectant treatment is best, unless there are some definite indications for operation.

Chronische Appendizitis. J. KAUFMAN. *New Yorker Medizinische Monatsschrift*, January, 1909.

The diagnosis and operative treatment of chronic appendicitis have often been based on subjective symptoms alone. The result has been that symptoms have persisted after appendicectomy (at operation a normal appendix was not infrequently found) and that later the symptoms were found referable to some other intraabdominal organ—stomach, intestine, gall-bladder, etc. Tenderness at McBurney's point is by some considered pathognomonic of appendicitis, but the writer has found this sign present in other affections, especially in inflammatory diseases of the cecum. He has found that, in a number of cases, McBurney's sign has persisted after appendicectomy. Meltzer's sign is of considerable diagnostic value in chronic appendicitis. Other factors in diagnosis are sudden onset of localized pain with localized tenderness, reflex generalized abdominal cramps with diarrhea (in lead, gastric, biliary, ureteral colics there is usually constipation), and persistence of localized tenderness and pain after the bowel disturbances have ceased. This is in contrast to diseases of the intestines, in which pain and tenderness disappear after the attack of diarrhea and cramps.

A Case of Epiploitis Following the Radical Cure for Inguinal Hernia. C. G. CUMSTON, Boston. *New York Medical Journal*, February 6, 1909.

The hernia contained a large mass of omentum which required ligation and removal. The day following operation, the patient complained of considerable pain and the abdomen was distended. These symptoms continued up to the eighth day (the bowels had moved satisfactorily), when the temperature rose 2° C. and at the same time there was an aggravation of the symptoms above mentioned. The abdomen became more distended and was painful on percussion. On palpation a tumefaction was noted on the side of the operation, extending from the iliac fossa to the costal border, most marked over the cicatrix of the operation. The mass was tender, dull on

percuSSION and appeared to lie superficially. At the end of 12 days the temperature reached normal, all the symptoms had gradually abated, and the tumefaction slowly disappeared.

Intramuscular Inguinal Hernia (*Ueber intramuskuläre Inguinalhernien*). V. SCHILLER, Vienna. *Wiener Medizinische Wochenschrift*, February 8, 1908.

In this form of hernia, the sac, instead of descending into the scrotum, passes upward and outward between the external and internal oblique muscles. Twenty-seven cases of this variety have been reported, to which the author adds four of his own. The majority are of the congenital type of hernia, with a monolocular sac and an ectopic testicle. The testicle, as a rule, lies near the external ring and is atrophic. The sac is oval in shape, seldom exceeds the size of a hen's egg and lies parallel with Poupart's ligament. The author attributes the genesis of this abnormal position of the sac to two factors. 1. Prevention of descent by the ectopic testis; 2. Badly fitting trusses. A noteworthy feature of this form of hernia is its irreducibility and therefore a large proportion of incarcerations.

Osteotomy of the Cuneiform for Hallux Valgus (*Osteotomie des Keilheimes bei Hallux Valgus*). H. RIEDL, Linz. *Archiv für Klinische Chirurgie*, 1909. Vol. 88, No. 2.

After reviewing briefly the more important operative methods for the correction of hallux valgus, the author describes a new procedure which he employed successfully in one case. A longitudinal incision is made over the inner border of the foot, so as to expose the internal cuneiform and corresponding tarso-metatarsal articulation. A wedge with base outward is cut out of the cuneiform and the base of the metatarsal is sufficiently liberated to make it mobile. The bone is then forced from its position of adduction into normal, parallel relation with the other metatarsals. Redressement of the big toe follows, and, after suture of the wound, a plaster of Paris dressing is applied. The author advises the wearing of a cast until bony union has occurred. The skiagrams taken several months after operation show an ideal result.

Subacromial Bursitis. L. FREUND. *Medizinische Klinik*, March 14, 1909.

In a case of inflammation of, or hemorrhage into this bursa, following trauma, the diagnosis could be made only by radiography. The picture showed a distinct, sharply-outlined shadow of dumb-bell shape, in the position of the bursa. The shadow in subsequent radiographs disappeared as the symptoms receded.

Anterior Metatarsalgia; its Causes and its Relief. N. ALLISON. *Boston Medical and Surgical Journal*, February 25, 1909.

The main predisposing cause, according to the author, is the pinching and crowding forward of the metatarsal bones from tight and poorly fitting shoes. This causes a sinking of the anterior arch resulting in compression of the affected branch of the external plantar nerve between the heads of the metatarsal bones. The ordinary methods of raising this arch by means of pads, plates, etc., all have their disadvantages. The author has devised a simple method which can be conveniently worn and which has proven highly effective in his hands. A depression is cut in a plaster cast of the affected foot, so that the point of greatest concavity is behind the heads of the second and third metatarsal bones. The depression is made elliptical or circular, broad or shallow, to suit the individual case. A leather or felt pad is made to fit this depression and is then sewed to a band of thin, soft, pliable leather, which is applied around the anterior part of the foot and laced tightly over the dorsum. The slight hallux valgus usually present keeps this band in place. In addition the author orders exercises whereby the muscles of the anterior foot are developed and educated. He believes that no reason exists for excision of the head of the fourth metatarsal bone.

Injury to the Semilunar Cartilages of the Knee. R. MORISON, Newcastle-on-Tyne. *Lancet*, February 27, 1909.

As surgeon in a large mining district Morison has had occasion to see a large number of the above cases; he has operated on 75 in all. The prevailing assumption that the pathology of injury to the semilunar cartilage is a displacement, the author has found to be entirely wrong. In all of his cases the lesion was found to be a fracture; the dislocation is merely secondary. He concludes that displacement, without fracture, if it occurs at all, must be a very rare event. Of 100 cases, in 98 the internal cartilage was fractured and in two the external. The diagnosis is made by the typical history of sudden locking, the inability to extend the knee, and swelling of the joint following the attack. In a fair percentage of the cases, osteo-arthritis changes may occur, resulting in more or less permanent disability. The treatment of recent cases consists in first reducing the dislocated cartilage. This can usually be done by flexing the joint to its fullest extent and then suddenly extending it. If not, rotatory movements should be made in the fully flexed position before extension is performed. If this also fails, these movements should be repeated under anesthesia. After reduction, splints are applied for six weeks. If displacement recurs, the case may be treated by the aid of a support or by operation. For persons whose livelihood depends on a strong knee, the support is useless and a radical operation is advised. This operation consists in a hockey-shaped vertical incision on the inner side of the knee, opening of the joint and removal of the anterior two-thirds of the affected cartilage. Of 41 operated patients in whom the subsequent history could be traced, 38 reported themselves able to work, while 3 were still disabled. The average time before work was commenced was about 12 weeks.

Bismuth Poisoning. Two Cases, with One Fatality, Following Injection of Bismuth-Vaselin Paste. V. C. DAVID and J. R. KAUFFMAN, Chicago. *Journal of the American Medical Association*, March 27, 1909.

Bismuth Poisoning. VICTOR J. BACCUS, Chicago. *Journal of the American Medical Association*, p. 1273, April 17, 1909.

In the first case, male, aged 24, 3 ounces of 33 $\frac{1}{3}$ per cent. bismuth-vaselin paste (Beck) were injected into a tuberculous hip sinus. Twenty days later 6 ounces were injected. Eleven days later there developed ulcerative stomatitis with loosening of the teeth, swelling, salivation and pain; also headache and constipation. Gradual improvement in 6 weeks, leaving blue deposits in mucosa. Later, an abscess of the thigh was opened and some bismuth paste evacuated. Three months after injection the patient developed a transitory psychosis. Never palpitation, cyanosis, dyspnea or dizziness.

In the second case, male, 21, 6 ounces of 33 $\frac{1}{3}$ per cent. bismuth paste were injected into a hip sinus. Ten days later there developed stomatitis, and, after a few days, vomiting. The stomatitis (and glossitis) progressed and the pulse became rapid and weak. Restlessness, insomnia and choreiform movements developed, then involuntary evacuations, bedsores and complete irrationality. Death 27 days after the injection.

[The amounts of bismuth injected in these cases seems dangerously large.—ED.]

Concerning these cases, VICTOR J. BACCUS wisely suggests that when symptoms of poisoning appear the sinus should be opened and the paste removed. He reports a case (boy of 10), in whom stomatitis appeared 5 days after injecting 2 ounces of 33 per cent. paste into an appendicitis sinus. The paste was removed; and subsequently $\frac{1}{2}$ ounce injections were made with resulting cure and no poisoning.

Bismuth Poisoning and a Non-Poisonous Substitute for Bismuth in X-Ray Photography (*Ueber Wismutvergiftung und einen ungiftigen Ersatz des Wismut für Röntgenaufnahmen*). L. LEWIN, Berlin.

Muenchener Medizinische Wochenschrift, March 30, 1909.

Bismuth poisoning is increasing in frequency. Both administration by mouth, or absorption from granulating surfaces can occasion serious changes, depending upon idiosyncrasy. The commonest symptoms are discoloration of the tissues, local changes such as stomatitis and ulceration, intestinal derangement, irritation of the kidneys, circulatory changes, and fever, headache and delirium. These disorders are due to the bismuth and not to the nitric component of the salt.

The author has experimentally examined various metals in order to discover a harmless substitute. Magnetic iron ore in extremely fine powder form (passed through a sieve containing 5,000 openings to the square centimeter) has proven excellent when administered in a 15-30 per cent. mixture with mashed potatoes, etc. No disturbances of any kind are noted. The radiographs even excel those obtained with bismuth mixtures.

Floating Spleen with a Twisted Pedicle and Intestinal Obstruction. V. I. LEDOMSKY. "*Chirurgia*" (Russian), December, 1908.

Ledomsky describes a very interesting case of a simultaneous occurrence of an obstruction in two different places of the intestinal canal, caused in each place by a different etiological moment. The patient entered the hospital in a moribund condition, with all the symptoms of an acute ileus. On examination besides the clearly felt intestines, there was noticed, to the right of the umbilicus a solid tumor with the size and shape of a kidney. At the operation the tumor proved to be a floating spleen displaced to the right of the median line. It was necrotic, and its twisted pedicle compressed a large loop of the intestine, producing a strangulation. When the pedicle was doubly ligated and cut and the spleen removed, it was found that another loop of the intestine had slipped through a slit in the mesentery. This loop was both strangulated and twisted fully 360° on its mesenteric axis. The strangulation line of this loop became necrotic. Instead of resecting the necrotic segment, Ledomsky invaginated it and stitched over with Lembert sutures. The patient made an uneventful recovery. Ledomsky considers the floating spleen the primary etiological factor in the strangulation of both loops.

A Skin Reaction in Carcinoma from the Subcutaneous Injection of Human Red Blood Cells. Preliminary Report. CHARLES A. ELSBERG, New York. *Journal of the American Medical Association*, March 27, 1909.

That hemolysis so often occurs, *in vitro*, on mixing with red blood cells the serum from carcinoma patients suggested to Elsberg the possibility of securing, with perhaps even more frequency, a local reaction by injecting human red blood cells subcutaneously in patients with carcinoma.

Blood drawn from the vein of a healthy individual is defibrinated, and the blood cells repeatedly centrifuged and washed in salt solution. Five minims of a 20 per cent. suspension (in saline solution) of these cells are injected subcutaneously in the forearm of the suspect. Elsberg's preliminary report indicates the possibility of a diagnostic usefulness for this test.

A "positive reaction" is marked by the appearance, in 3 to 12 hours, of a slightly raised, tender, dusky red area at the site of injection, disappearing in 8 to 24 hours—entirely or leaving a brownish or yellowish discoloration. In 34 cases of known carcinoma all reacted positively; likewise three in four cases of sarcoma. The reaction in 100 cases, normal or suffering with various diseases other than new growths, was negative in all but three. Cases of pulmonary tuberculosis were among these that reacted negatively! (A positive reaction appeared in some cases, not suspected of carcinoma, in which cancer was found at operation.)

Diagnosis of Carcinoma of the Rectum. L. KUTTNER. *Zeitschrift für Krebsforschung*, 1909, Vol. II.

For the palpation of carcinoma high up in the rectum (beyond the palpating finger) the bowels are constipated

by bismuth for several days; occasionally, by the simple procedure, the tumor may be pushed down so that it can be felt. Another method is to thoroughly empty the lower bowel, when the tumor may float up and be felt through the abdomen. To aid this "floating," the rectum may be carefully inflated with a double tube. Of considerable value in the diagnosis of high-seated growths is the radiograph taken after bismuth emulsion is injected into the rectum; this not infrequently shows the situation and extent of the stricture.

Suture of Heart Wounds. G. T. VAUGHAN, Washington. *Journal of the American Medical Association*, February 6, 1909.

Vaughan gives a historical sketch of the operative surgery of the heart and reports a case of successful suturing of a wound, one-third of an inch in length, opening into the right ventricle. Two rows of silk sutures were used and two bleeding points caught up and ligated with catgut. The pericardium was closed with a continuous catgut suture without drainage. He tabulates and analyzes the reported cases, and summarizes his conclusions substantially as follows: 1. There is no question as to the propriety of operation, since 35 per cent. of the patients recover, as compared with 15 per cent. (according to Holmes and Fisher, 1881) of recoveries after non-operative treatment of heart wounds—a gain of 20 per cent. 2. The mortality is practically the same as that of twelve years ago, when the operation was first attempted, and it behooves the surgeon to study the matter and seek for some improvement. 3. The two chief causes of death are hemorrhage and inflammation of the pleura or pericardium. Probably nearly everything possible has been done to prevent hemorrhage, but since more than half the patients who survive over twenty-four hours become infected, there is room for great improvement in this respect. 4. To prevent this, besides the observance of strict asepsis, the question of opening the pleura and the drainage of the pleura and pericardium must be considered of the greatest importance. 5. As a rule, therefore, the pericardium and pleura should not be drained.

Extraperitoneal Cesarean Section (Ueber den Extraperitonealen Kaiserschnitt). A. DÄDERLEIN, Munich. *Zentralblatt für Gynäkologie*, January 23, 1909.

Frank performed Cesarean section in infected cases by a transverse incision just above the symphysis; opening up the peritoneum, then sewing the peritoneal flaps to the anterior surface of the cervical segment before incising the uterus. Sellheim went a step further by peeling the intact peritoneum upward from the bladder and cervix so as to perform his hysterotomy entirely extraperitoneally. Unfortunately it is not always technically possible to mobilize the peritoneum in this fashion. Däderlein, in two cases, used the following technic with success and ease. He made a suprasymphyseal transverse incision (method of Pfannenstiel), additionally incising the right rectus fibers a trifle. He then separated the peritoneum laterally, instead of in the median line, and found that a large portion of the lower uterine segment could be exposed with ease. The ureter did not come into view. He then incised the uterus in a longitudinal direction (care must be taken not to injure the child, as the uterine wall is thin), and extracted by means of forceps through the incision. The uterus was closed in layers and the abdominal wound sewed up without drainage. The peritoneum laterally is so freely mobile that the difficulties encountered in the other methods is completely obviated.

Osmic Acid Injections for the Relief of Trifacial Neuralgia. H. H. GERMAIN, Boston. *Boston Medical and Surgical Journal*, February 4, 1909.

The author has operated on 11 cases according to Murphy's method of injecting a 2% sol. of osmic acid peripherally. Three cases were well after two years; two cases were well after one and a half years; one case well 10 months after, but with recurrence in another branch; one recurrence in two months; one in one year, and one in two years. One case was lost sight of.

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ACUTE PANCREATITIS: SYMPTOMS AND TREATMENT.

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In my thesis for admission to the American Association of Obstetricians and Gynecologists in September, 1906, published in the *American Journal of Obstetrics*, Vol. LIV, No. 6, titled, "Acute Pancreatitis, with a Report of Five Cases," I made the following statement:

"Chemical analyses, as now understood in pancreatitis, are frequently misleading, and as a result of these conflicting chemical conditions, symptomatology must for the present be relied upon by us in urging our patients to submit to an abdominal section which smatters somewhat of an exploration."

I am now more than willing to withdraw this statement, as the Cammidge urine reaction C has been proven in the past two or three years to be overwhelmingly satisfactory in making our deductions for diagnosis, especially so when the history and other analyses are well taken and made. This remark applies to those acute, sub-acute and chronic cases in which time for analysis of the urine and excreta does not endanger the patient's chances for an operative recovery, and does not apply to those cases of acute hemorrhagic pancreatitis in which the onset is one of intense or acute abdominal shock, where the necessary delay of twelve to twenty-four hours for the collection of urine, and the subsequent twenty to twenty-four hours for developing the Cammidge reaction, would jeopardize the patient's life to such an extent as to reduce his operative recovery chances to almost nothing. It is this latter variety in which often the exploratory operation is necessary to develop a diagnosis due in a great degree to the very fact that time cannot be given for the Cammidge test. Furthermore, the difficulties in making a definite diagnosis in the ultra-acute stage, or onset, of this disease are multiplied

by the contiguity of the trinity of frequently invaded organs or viscera in this small area. This trinity consists of the pylorus, the gall-bladder and its ducts, and the head of the pancreas with its most vulnerable area, so thoroughly defined by Dr. William Mayo.

This space I described in the thesis quoted as being an area irregularly pyramidal in shape, the base not exceeding three inches square, largely to the right of the median line in the normal human subject, with the apex surrounded by the common biliary duct, head of the pancreas, the duodenal end of the stomach and the first portion of the duodenum.

The difficulty of clinically establishing an absolute diagnosis of disease invading one of the structures mentioned as forming the boundary of the apex of the pyramid can readily be understood, and therefore it is manifestly important that all aids in the chemistry of digestion and the excreta be called into play.

I also quote Robson and Cammidge, Preface page II: "In our own practice we never rely upon the 'Pancreatic' reaction alone in making a diagnosis of pancreatitis or malignant disease of the pancreas, but always take into account the results of a complete analysis of the urine and a chemical examination of the feces, as well as the clinical symptoms; it is from neglect of these precautions, and under the false notion that the 'pancreatic' reaction was claimed to be pathognomonic, that the mistakes made by some writers have arisen.

The analysis of the stools have shown undigested muscle fibers, and although this condition exists in other abdominal lesions, its frequency in pancreatitis is sufficient to lend evidence as a factor in the symptom complex. Fatty, or butter or oily stools also are in evidence as factors. Then large spongy stools, much larger in quantity than the food intake would warrant in healthy beings, are also in evidence. These latter evidences have a decided bearing in chronic or subacute pancreatitis only.

The urine, in addition to giving the Cammidge reaction, has been found quite frequently to contain sugar. I have previously reported five cases, synopses of which I shall incorporate in this paper, all

* Read before the Surgical Section of the New York Academy of Medicine, March 5th, 1909, and the Williamsburgh Medical Society, March 8th, 1909.

without any evidences of sugar before or after the onset, and will add a sixth case, one of acute hemorrhagic pancreatitis, with no sugar. Dr. Thayer—*Johns Hopkins Bulletin*, November 5th, 1906—reports a series of five cases, with no sugar. I am inclined to look upon the evidence or absence of sugar in acute cases only as a coincidence, and not as a distinct evidence.

Hewlett's lipase findings (see Thayer article) was a constant factor in all cases of insult to the pancreas, but this reaction also requires a complex chemical outfit and process, with a period of more than twenty hours actual preparation, and therefore is negated as of value in the ultra-acute cases.

Causation:—The duct of Wirsung is without question a very frequent source of entry of infection. One of the hemorrhagic cases reported in this paper presented two small biliary calculi (upon autopsy) in the duct of Wirsung. Gallstones were found plugging the Vaterian papillus, causing a damming back of bile into the duct of Wirsung, or Santorini. In addition, traumatism, alcoholism and arterio-fibrosis are also factors.

Cause of death in the acute cases has been summarized by Doberauer (*Beit. Z. klinische Chir.*, Von Bruns Tubigen, Vol. XLVIII, No. 2) in an analysis of six acute cases, and thirty-five experiments on dogs, as due to a toxin; and Guleke demonstrates, in his experiments quoted above, that in acute necrosis cases, death is due to intoxication with trypsin.

In the six cases reported or referred to in this paper as occurring in my practice, four were hemorrhagic—two living—while the remaining two resulted in abscess formation—one living. In one of the hemorrhagic cases the pancreas was almost completely destroyed; its former site being occupied by blood clot. None of these cases were accompanied with any slough, although sloughing is one of the terminations of an acute inflammation of this viscus.

Two of the patients were males, four being females. None were alcoholics, nor syphilitics. Two, females, were under thirty-three; the remaining four were over forty years of age.

Symptoms.—The onset of this condition is usually a sharp pain, accompanied with varying degrees of shock, rapidly followed in some cases by a profound toxemia, denoted or characterized by a peculiar cyanosis and lividity, with shallow breathing and rapid pulse. Halstead also calls attention to the lividity of the face and abdominal wall.

The pain is frequently of a far more intense degree than that of appendicitis or gastric perforation, etc.; in fact, my suspicions were aroused in two of

my cases by the large quantities of morphia used by the family physicians to control the pain.

Hiccough is a symptom of relative frequency and persistence; there is vomiting with and following the pain onset. Pain in the back, of an intense splitting character, has been evident in four of my cases. Pain as a symptom was also spoken of by Halstead as being more severe than that of gall-stone colic. These symptoms, when considered with a history of previous digestive disturbances and gall-bladder or duct invasions, should cause us to give the subject of pancreatitis great weight.

Fitz's rule (Robson and Cammidge, page 399) is worth bearing in mind: "Acute pancreatitis is to be suspected when a previously healthy person, or sufferer from occasional attacks of indigestion, is suddenly seized with violent pain in the epigastrium, followed by vomiting and collapse, and, in the course of twenty-four hours, by a circumscribed epigastric swelling, tympanitic or resistant, with slight rise of temperature."

The subsequent manifestations are those of any ordinary peritonitis, *i. e.*, abdominal distension, obstruction due either to pancreatic pressure or intestinal paresis. Later, a tumor formation anywhere in the epigastric, or rather, supra-umbilical zone.

Treatment.—If in doubt, explore. If upon exploration we meet with a peculiar bloody, beef-broth like serum, or peculiar warty, yellowish-white plaques (fat necrosis) upon the omentum or mesentery (provided no strangulations exist as a cause of this bloody serum), we can safely extend our search to the pancreas.

If an acutely hemorrhagic, enlarged pancreas be found, an incision should be made in its coat of peritoneum, and a puncture or punctures made in the pancreas itself. Gauze, or other drains, should be placed in and about these incised and punctured areas.

If gangrenous or suppurative, drainage sufficiently free to allow of ready expulsion of the sloughing material and drainage of the pus should be provided, either by the anterior route, or in the costo-vertebral angle, although I feel that better and less dangerous work can be done by the anterior route.

The question of doing a cholecystotomy or not is one that each individual case itself will present for consideration.

In the six cases reported in this paper the gall-bladder was drained three times, each time for large numbers of stones. In one of the remaining cases it was palpated and inspected without being drained. In the remaining two cases it was not

seen, owing to the pus collection being well to the left.

Two of the cholecystotomy cases died and one recovered, while two of the remaining cases recovered, and the third died weeks later from exhaustion and multiple infective abscesses.

Synopsis of cases previously reported in the *American Journal of Obstetrics*, Vol. LIV, No. 6.

CASE I.—ACUTE HEMORRHAGIC PANCREATITIS: Cholecystotomy, 2,350 stones removed; intense pain onset; female, fifty-three years of age; corpulent; seen on the third day. Patient cyanosed, livid, pulse small and abdomen distended. Incision for gall-bladder, followed by gush of bloody serum. Fat necrosis well marked. Death in twenty-four hours. No sugar in the urine.

CASE II.—ACUTE HEMORRHAGIC PANCREATITIS: Female, thirty-two years of age; intense pain onset; seen by me about eight and a half hours after the onset. Had had three-quarters of a grain of morphia in six hours. Pulse 98, temperature 100°. Shock marked, cyanosis, pain referred to appendix. Primary incision over the appendix, followed by bloody brown fluid. Incision continued upward to pancreas, which was found blue-black and distended; drainage by puncture, etc.; gall-bladder contained no stones; recovered.

CASE III.—HEMORRHAGIC PANCREATITIS; COMPLETE DESTRUCTION OF THE PANCREAS; TWO GALL-STONES IN THE DUCT OF WIRSUNG: Male, forty-four; onset required four grains of morphia in thirty hours. Pain onset intense in back; singultus and vomiting. History of hemophilia and gall-stone colic. Previously had slight digestive attacks. I saw him on the eleventh day, with painful epigastric swelling. Upon operating it was taken for a perforating pyloric ulcer, with exudate. Small spot of fat necrosis were taken for pieces of corn, of which he had recently eaten largely. Gall-bladder full of stones. Patient died on or about the eighteenth day, after having had several hemorrhages from the wound.

Autopsy showed complete destruction of the pancreas, with large blood clot in the original site, and two calculi in the duct of Wirsung, these latter proved by analysis to be biliary.

CASE IV.—SUPPURATIVE PANCREATITIS: Male, forty-nine; irregular attacks for years of suspected gallstone colic; onset required three-quarters of a grain of morphia in a few hours. Attack most severe of any he had had. Pain originally in the right side; two days later was in the neighborhood of the spleen. Mass appeared in four days after the onset. I saw him on the tenth day, and advised operation. He finally consented on the twelfth day. Tumor in the left epigastric and hypochondriac space; drained of about one quart of foul smelling pus, with necrotic or fat necrotic areas. Panniculus adiposus in the incision became covered with areas of fat necrosis, etc.; gall-bladder not seen; recovery.

CASE V.—SUPPURATIVE PANCREATITIS: Female, about sixty-four; corpulent; explored by the late

Dr. William T. Bull three years before for supposed gall-bladder, etc.; nothing found. Patient recovered, but digestive disturbances continued constantly. Taken ill three weeks before I saw her, with a pain similar to the one for which she was operated upon by Dr. Bull. The tumor presented to the left of the median line on the twelfth day. I saw her on the twenty-first day, with a well-defined, fluctuating tumor, to the left of the median line. Pus evacuated. All evidences in the operation wound of subsequent fat necrosis. Backache always well marked. Nausea and hiccough. Died from exhaustion due to secondary multiple abscesses about eleven weeks after the onset.

CASE VI.—ACUTE HEMORRHAGIC PANCREATITIS: Female, twenty-two years of age, was sent to me on August 13th, 1907, with the following history: On June 13th she was taken with pain. For some time previous to this date she had suffered from "spoiled stomach," etc. On this day she was seized with vomiting and abdominal pain, typical of gallstones, the pain continuing for a few days. She had a number of attacks between June 13th and August 13th, in one of these attacks being markedly jaundiced. Was taken ill on the 12th of August with sharp abdominal pain, intense and back-splitting. Was given immense doses of morphia, with no relief.

When she was brought to the sanitarium the patient presented more or less evidence of shock, rise of temperature and rapid pulse, intense pain in the epigastric region of the abdomen, which extended laterally into the back, and also to the area of the gall-bladder. Diagnosis was made at the time of in all probability acute, hemorrhagic pancreatitis. Request was made to open the abdomen that night, and was refused, but the following morning the conditions were so much worse that the family themselves saw the change, and consented to the opening of the abdomen.

Upon opening the abdomen there was a free gush of beef-broth like fluid, and a few evidences of fat necrosis. The pancreas was rapidly exposed and found to be profoundly hemorrhagic. The edematous infiltrate retroperitoneally extended toward the hepatic flexure and the ascending colon. Palpation of the gall-bladder revealed it filled with numerous small stones, seventy in all being removed by cholecystotomy. The peritoneum over the pancreas was punctured in several places, and a drainage put down to this site. The patient reacted beautifully from the operation. There was free drainage of musty, mucilaginous material for several days. The edges of the wound showed fat necrosis in the panniculus adiposus. She was placed in a semi-sitting posture in about two days, and was dismissed from the hospital at the end of the fourth week, the wound being practically closed. Now, at the end of fifteen months, the patient has had no disturbances, except slight digestive ones. She has gained in weight. Urine analysis at the time of the operation proved negative as to sugar. No Cammidge test was made, on account of the emergency.

None of these cases had at any time showed evidence of sugar in the urine, frequent analysis being made in five of the cases.

In conclusion, I would call attention to some of the pronounced symptoms:

The marked pain at the onset.

The sharp intoxication of some of these cases.

The dyspnea and lividity seen in many.

The constant splitting backache; and finally to emphasize early exploration when a given set of symptoms, such as are presented in this paper, manifest themselves.

60 WEST 52ND STREET.

ELECTRO-THERAPEUTICS IN SOME OF THE DISEASES OF THE GENITO- URINARY TRACT.*

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The various forms of Electro-Therapeutics in the treatment of diseases of the Genito-Urinary Tract, constitute a subject on which comparatively little has been written and not a great deal of good work done, and yet it is a field with enormous possibilities for results, if the reports from the few men who have devoted considerable time and attention to the subject are to be taken as exact. One thing which has retarded the progress of electro-therapeutics, not only in this field but in all branches, is the incredulity of the profession at large towards it, and that is not to be wondered at considering that for so long a time electricity has been a medium through which quacks and charlatans have played upon a suffering public.

As introductory to this subject I need but refer to the diagnostic-therapeutic service in genito-urinary diseases of the endoscope, the cystoscope and the *x*-ray.

The therapeutic use of the *x*-ray in genito-urinary disorders is the same as it is in general work, namely, the treatment of malignant conditions. Epithelioma of the penis has been treated successfully, as also carcinoma of the prostate, and in passing I might say that in using the *x*-ray for superficial lesions, a "medium" tube should be employed and it should be placed comparatively near the subject, say a distance of seven or eight inches from the anode, while for deeper work, such as the treatment of abdominal conditions a "higher" tube at a distance of eighteen or twenty inches is better. In close work the danger of a burn is of course greater, and the case must be carefully

watched. Dr. Sinclair Tousey has reported a number of cases of prostatic hypertrophy treated by means of the *x*-ray with good success. I have used it on a few cases with no very marked results. It must also be borne in mind when using the *x*-ray that cases of nephritis are usually aggravated by its use.

Since Apostoli introduced electricity in the treatment of gynecological cases, much has been done by its use in that branch and I suppose might rightly be considered in this paper, but I shall here touch very lightly on that phase of its use. In gynecology the faradic and galvanic currents are both used. The faradic as a rule may be considered as a stimulant, and a promoter of increased vascular action in the parts through which it passes, though in some cases it is a sedative and allays pain. It acts as general tonic, assisting elimination, but it is more mechanical than medicinal. Its use in gynecology is principally in cases of deficient development of uterus or ovaries, amenorrhea, subinvolution and submucous fibroids.

The diseases in which the galvanic current is indicated are hyperplasia uteri, chronic inflammation of the ovaries and tubes, neuralgia, dysmenorrhea, erosions of the cervix, subinvolution and fibroids. I will not go into a description of the mode of use for these different conditions, but will remind you that in using the galvanic current the secret of success is to know, and always bear in mind, the effects produced by the positive and the negative poles. Keep therefore always in mind these facts; that from the positive pole oxygen is liberated, from the negative, hydrogen; the positive is acid, the negative alkaline; the positive will stop bleeding, the negative increases bleeding; the positive is sedative, the negative produces hypersensitiveness; the positive hardens tissue, the negative liquifies and disintegrates; the positive is an acid caustic and the resultant cicatrix is hard and unyielding; the negative is alkaline and the cicatrix is soft and pliable; the positive is vaso-constrictor; the negative is vaso-dilator.

Polarity means everything in the application of the galvanic current, and where the positive pole is indicated the negative will do harm. But there need be no guesswork, if the fundamental physics of polarity is learned and you will neither try to stop hemorrhage or allay pain with the negative pole.

Before considering how galvanism may be used in the treatment of genito-urinary affections, let us determine what is meant by electrolysis and cathoporesis. Electrolysis is the breaking up of a sub-

* Read before the Hospital Graduates Club, Brooklyn, October, 1908.

stance into its elements by electricity, and before this can be done certain conditions are necessary. The substance must be fluid or semi-fluid; it must be a conductor of electricity and one of its constituent elements must be a metal or a salt of a metal. Hydrogen is considered a metal and water being a composition of hydrogen and oxygen it may be supposed that anything containing water fulfils the conditions. When a substance is decomposed by electricity the products of such decompositions are called ions; those which appear at the anode or positive pole are called anions; those at the negative pole kathions. Anions are electro-negative and repelled by the negative pole; kathions are electro-positive, repelled by positive pole, and drawn to the negative, under the law that unlike poles attract, like poles repel.

Cataphoresis is the process of introducing medicine into the body by the aid of electricity, and because a constant current passes from the positive to the negative pole it is not uncommonly supposed that all medication must be placed on the positive pole in order to be forced into the tissues. If we will remember that cataphoresis is an electrolytic process and in every instance the medicine is broken into its elements, and according as they are anions and kathions they seek the different poles, we will get results. For instance, if treating an enlarged prostate with a solution of potassium iodide, the solution must be used on the negative pole if we wish to get the resolvent effects of the iodine, as iodine is electro-negative and has a strong affinity for the positive pole.

Remembering the effects of electrolysis and cataphoresis we may now take up the subject of galvanism as a curative agent. Taking organic stricture first as probably the most common genito-urinary trouble which we see, it is treated as follows: Using an instrument with its insulated shaft and bulbs of various sizes, attach a bulb two or three sizes larger than the caliber of the stricture; this is attached to the negative pole, the positive is placed on the abdomen or back, and the current is turned on gradually, until 5 m.a. is reached. No pressure is required more than to hold the bulb engaged in the stricture. The alkaline action of the negative pole will usually carry the bulb through in about five minutes. Repeat in five days, using a larger bulb.

Strictures can be most successfully treated in this manner and the failures which have been reported are probably in every case due to using the positive instead of the negative pole, or to employing force. The positive would, of course, do harm,

as it would produce the very condition it is intended to overcome.

Chancroids are treated by metallic electrolysis. A copper electrode is attached to the positive pole and applied to the lesion, the negative pole is placed on some indifferent place. The current should be strong enough and of sufficient duration to deposit the oxychloride of copper deeply into the tissue. This is ascertained by the green color which the lesion assumes. The stimulating, astringent and antiseptic effect of the copper are thus secured.

When using the positive pole with a metal electrode, and the treatment is finished, it is always well to reverse the current for a moment, otherwise you will have difficulty and give your patient pain. In case the positive pole has become adherent do not reverse the current with both electrodes in place or the subject will receive a sharp and disagreeable shock.

Chronic urethritis and granular urethritis may also be treated by metallic electrolysis in the following manner: Take a hollow sound with its insulated shaft of rubber, and several perforations either through its entire length or only at the end. Through the hollow sound is passed a copper wire wound loosely with cotton thoroughly wet with normal salt solution. Attach this to the positive pole, the negative being placed on the abdomen or perineum. Turn on the current and increase gradually until a strength of 5 to 8 m.a. is reached and maintained for about ten minutes. In this way you obtain the sedative effect of the positive pole, and the local stimulating and astringent effect of the oxychloride of copper.

For soft, bleeding and granular spots in the anterior urethra an endoscopic tube of hard rubber may be used and the electrode passed through that into direct contact with the spot it is desired to treat. The same hollow sound described a moment ago is also used in the treatment of enlarged prostate, the openings being only on the distal end and not through the entire length. But in these cases the solution used would be iodide of potassium about 30 grains to the ounce, and in order to get the alterative effect of the iodine, we make use of the principle of cataphoresis. As I said before, iodine being electro-negative, has a strong affinity for the positive pole; therefore, we attach this time the negative pole to the copper wire, and the positive outside, and the iodine is drawn deeply into the tissues and at the same time we get the softening and disintegrating effect of the negative current. In almost all these old prostatic cases there exists more or less loss of muscular tone. This

may be treated at the same time by leaving the electrode in place; turn on a slowly interrupted current for about five minutes, the massage obtained this way tones up the muscle, improves circulation and consequently assists materially in the absorption of the products of decomposition brought about by the first treatment.

The actual cautery has its uses in genito-urinary surgery, as exemplified in the Bottini operation, which, however, I think is of service in only a few selected cases.

Other genito-urinary disorders which may be treated and benefited by electricity are spermatorrhea, seminal emissions, impotence, incontinence of urine and paralysis of the bladder. The first three are usually seen in young men, and are functional in character and usually associated with neurasthenic symptoms, and in these cases excellent results are obtained in the great majority. No one particular kind of current is used, but as a general thing the best results in these cases are obtained by faradization of the urethra. We all know that in these cases the passage of a sound frequently does good by its mechanical pressure, which tends to unload the capillaries and lessen sensibility; now when that same sound is faradized and we obtain a vibratory action and a slightly sedative one, the good effects are increased.

The static, and high frequency currents are of great value in cases of neurasthenic origin, using the spray, the brush discharge, and the spark. Incontinence is treated by the faradic current, one pole over the symphysis, the other over the perineum.

Paralysis of the bladder, usually dependent upon some incurable condition of the cord, can perhaps be benefited by local and general treatment, but nothing very startling can be accomplished in these cases.

The static and high frequency currents have their use in the neurotic patients and of very great use they are. One other and most important use of the static is the wave current in prostatic hypertrophy; with the patient on the insulated platform reclining on a chair or table, a metal electrode is placed in the rectum in close contact with the prostate, attached to the positive side of the machine; the other side is grounded, and the machine is started at a moderate rate of speed. Draw out one of the discharging rods, until the patient complains of discomfort, which he will do in proportion to the amount of congestion.

In acute congestion the spark gaps can be opened but a short distance without causing pain, but the

pain soon subsides. In the subacute conditions, a spark gap of two inches or more can be used. This current, used in this way, forces out of the gland and the vesicles, if the electrode is made to reach the vesicles, secretions and infiltrations, causes tissue contraction, and excites peristaltic action, and will reduce the gland more thoroughly than can be done by digital massage.

These, then, are some of the uses of electricity as applied to genito-urinary disorders. I do not proclaim it as a cure-all by any means, or that it should be used to the exclusion of other methods, but I do say that, used sometimes alone and sometimes in conjunction with other forms of treatment, results will be obtained more quickly and more satisfactorily than if it is not used at all.

132 MONTAGUE STREET.

THE CONSERVATIVE TREATMENT OF TUBERCULOSIS JOINTS.

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In bringing before you for consideration a paper dealing with such an extensive subject as the conservative treatment of tuberculosis joints, I do not wish to be understood as endeavoring to cover the field. No attempt will be made to enter into the etiology, symptoms or pathology of tuberculous bone disease, neither will the treatment of any one joint be taken in detail, but the ground will be covered in a general way by mentioning the principal points in a conservative treatment, and also by bringing to your attention, as examples, some methods used in a few of the larger joints. No claim to original work is made, but only a very brief review of some of the methods made use of in the care of tuberculous joint lesions. It seems to me that a great responsibility rests upon the surgeon when we consider that, if a child is brought to him suffering from this form of arthritis, the result depends upon the accuracy of his judgment, whether a radical operation shall be advised, or whether a conservative plan shall be elected, and upon his decision rest the chances for the patient, who in after years may be wholly dependent for his own support, as well as that of his family, upon the mobility of a joint, the length of a limb, or the ability to sit, stand or walk.

Conservative treatment has been described as that which "consists in so regulating the conditions of the life of the patient and the condition of the affected joint that they are not favorable to the growth and development of disease." Many

patients, even without treatment and left entirely to nature, recover, but usually with considerable deformity. If health is restored under such conditions without aid, cannot we expect to obtain much better results, and that, too, without deformity, if nature is assisted by surgical means scientifically applied? The statement is sometimes made that prolonged rest in a surgical appliance tends to cause permanent ankylosis; but does not the protection and immobility afforded by such an appliance favor a reduction in the activity of the disease, and does it not in this way lessen the likelihood of fibrous or bony ankylosis? And, on the other hand, who can say, after a radical operation has been done, that a sufficient amount of the joint surface has not been so injured as to render it useless, or whether the new bone which has been formed to replace that removed will ever shrink so that joint motion may again approach the normal, or even exist at all? Fibrous adhesions following the manipulations necessary in such an operation are always more extensive and tougher than those caused by disease, while the joint is in an attitude of rest, and after absorption during a considerable length of time has taken place. In radical surgery upon the joints of children we cannot ignore the liability of destruction of the epiphyseal cartilage, which would certainly at once stop the growth of that bone and prevent the development of the limb, which, together with a possible flail joint, would in adult life leave not only a useless, but a troublesome appendage. This treatment is perhaps not so well applied to those past middle life, and dependent wholly upon their work from day to day, for in these cases, since the limb has already fully developed, the time spent in the employment of conservative methods counts more than the post-operative convalescence, and the lost or limited function of the joint as a permanent result.

The fundamental principle of conservative treatment is rest, *i. e.*, physiological rest. Rest in this sense means cessation of all functions; the joint must neither bear weight or strain nor be moved in any direction. To all this must be added protection; that is, a certainty that it shall be free from blows, jars or pressure. A patient may rest more or less comfortably in bed, when tuberculosis of the hip joint is present, but if he sits up even once, he moves the joint, and may do more damage in that one instance than nature can repair in weeks. On the other hand, the patient may be very active and get about constantly, and still, with a suitable apparatus applied, may maintain the joint for all practical purposes in a state of perfect rest. A

man with a tuberculous ankle joint may wear a splint upon the extremity which fits to a nicety and which prevents any motion, and yet, if he bears his weight upon that foot, the case may go from bad to worse, and as an end result severe deformity may ensue, or amputation may become necessary.

In the treatment of tuberculous joints rest must be secured by appropriate apparatus which must fit that individual case accurately, and be worn constantly until the disease has entirely subsided, be it one or ten years. If such treatment is consistently followed, the relief will be apparent at once, and the prominent symptoms, such as pain, swelling and cramps, will cease almost immediately. The patient's expression will be more cheerful, he will eat better, sleep better, and, awkward as the appliance may seem to one in good health, he will not complain as much as the ordinary man with a new pair of shoes.

Rest in bed, always combined, however, with fixation and traction, would perhaps be the ideal treatment, if it were possible to supply the requisite amount of sunshine, fresh air and exercise. A portable or wheeling bed which can be placed out of doors may be used for the patient, and thus advantage may be taken of the open air in suitable weather, but this is not always possible, especially among the poor. During confinement in bed for a number of years the matter of bed-sores cannot be altogether ignored, and the appetite and excretions are not always as active as one would wish.

Ambulatory treatment, on the other hand, not only gives the desired rest to the joint, but furthermore it confers upon the patient all the advantages of walking in the open air. This furnishes him plenty of oxygen, sunlight and, last but not least, exercise, which has much to do with good appetite and uninterrupted sleep, all of which seem so essential to recovery. The excretory organs perform their functions much better and constipation is not so likely to ensue. Another thing to be thought of in ambulatory treatment is the mental state of the patient. In connection with such a matter-of-fact affair as tuberculous joint disease this might seem to some to be of slight importance, but it carries considerable weight. The patient has a chance to get about in a great measure as he is accustomed to do. He can go to theaters and other places of amusement; he can visit the stores; he is able to take rides upon the trolley cars and other conveyances; he can journey to the seashore or the country; in fact, he is almost as free as he ever was. The variety thus obtained diverts his mind from his troubles, which seem to him of no small moment in

a disease so chronic as tuberculosis, and his digestive and excretory functions are better controlled by the nervous system.

In the matter of splints, many materials may be made use of, such as wood, tin, steel, leather, celluloid, paper, and many other substances, but to my mind plaster-of-Paris, except in selected cases, can claim for its own more good points than any other one. A plaster-of-Paris dressing, properly padded, applied and trimmed will fit much better, hold the joint in the desired position better, and, on the whole, feel more comfortable to the patient than a splint made of any other inexpensive material. Plaster-of-Paris may be moulded and fitted to suit every whim of the surgeon and advantage can be taken of every bony prominence, which secures for the joint almost perfect rest. Almost any one is able to roll plaster about a limb, but if one expects a cast to fit well, stay in place for any reasonable length of time, and do the work intended for it, he should not leave it to a novice, because its skilful application requires considerable practice.

In the treatment of the shoulder a Velpeau's bandage seems to hold the joint still, and, if this is maintained for a sufficient length of time, a good result may be expected. With the elbow, protection and immobilization are in the majority of cases all that is required, and should the joint be flexed it is as well to put it up in that position and wait until the acute inflammation has subsided before endeavoring to secure a different position. In an affection of the wrist or carpus the same method is used and the splint should extend from the finger tips to the elbow. As far as the hip joint is concerned, it seems to me that the combination plaster spica and brace, with a high shoe and crutches, is the best type of appliance, as it approaches the nearest to perfect rest, and reduces all possibility of deformity to a minimum. Tuberculous knees and ankles should be enveloped in plaster, the former from the groin to the ankle, and the latter from the toes to the knee. The Thomas knee splint, which is worn over the plaster, seems to be the best apparatus for the two last-named joints. This, together with a high shoe and crutches, makes the outfit complete. By the use of these appliances it is impossible for the patient to get the foot to the ground, as the addition of the brace to the plaster prevents him from doing so; therefore, further protection against blows and jars is afforded the joint. Some of the advantages not before mentioned, which may be claimed by those who advocate the use of plaster-of-Paris, are that when it is once applied it seldom will be tampered with by the

patient during the surgeon's absence; it will do its work day and night; and it will generally be found in a satisfactory condition when next he calls. Adjustable apparatuses do not assure this security.

Bier's congestion method has been demonstrated to be a very valuable adjunct to the conservative treatment of tuberculous bones and joints. Whitman says that it "was suggested by the observation of Rokitsky that phthisis was uncommon in individuals suffering from disease of the heart when the mechanical obstruction was sufficient to cause venous congestion of the lungs." This form of treatment is applied generally to the extremities, such as the foot, hand, elbow, ankle, wrist and knee. If the knee be taken as an example, passive congestion is produced as follows: A rubber bandage or tourniquet is applied tightly about the thigh, just above the joint, so as to restrict the venous circulation, but not so closely that the pulse may not be felt at the ankle, and thus the veins below the constriction will be gorged with blood. The bandage must be tight enough to considerably impede the venous return, and still not so tight as to shut off the arterial flow. The skin assumes the color of a dark purple, the temperature of the leg is increased, and this, according to Bier, constitutes hot congestion. Cold congestion, which is not advised, takes place when the constricting band shuts off the arterial supply entirely. The foot may be bandaged tightly from the toes to a point just below the knee, when one wishes to confine the area of engorgement to those structures in and about the knee joint only. This procedure should cause no pain and generally very little discomfort, and may be employed for a period varying from a half-hour to three hours daily, according to the symptoms. It may be used in conjunction with splint treatment, in which case the splint should be removed during the period of congestion, and should not be applied again until the blood pressure in the limb is normal. Bier also devised the treatment by active congestion. By this method the hyperemia is produced by the application of heat to the part, and no mechanical interference with the circulation is used. He considers dry hot air to be the best agent at the present time. The heat is usually applied by means of the so-called hot air apparatus, which is sold by all instrument dealers, and gas, electricity, alcohol or gasoline may be employed to furnish the heat.

We will again take the knee joint as an example, and describe its treatment with the specially contrived knee-baker, which is a short oven open at both ends and taking its heat through a flue from

the lamp suspended underneath. To illustrate this method of treatment the process is described as follows: The knee is wrapped with several thicknesses of toweling, and so placed in the baker that the foot projects beyond. The hoods, which are made of cloth and prevent the heat from escaping, are now tied about the limb just above and below the knee and also over the ends of the oven. The heat may be maintained between 300° and 400° for a half or three-quarters of an hour daily, but care must be used to prevent blistering of the skin, as it is possible to burn a patient severely in this manner. The active hyperemia is not used for acute or advancing joint disease, and is less efficacious in tubercular lesions than is the passive congestion, which has a bactericidal action as well as an effect upon the absorption of exudate and other products of the disease.

As in the treatment of other chronic and exhaustive diseases, so in that of tuberculous joints, we must supply a diet which will make up for the drain upon the physical economy. Nature relies upon nutrition and elimination in the cure of such lesions, and in order to secure these, digestion must be good, and the bowels, kidneys and skin must be active. An easily assimilable diet should be pushed to the fullest possible extent.

As before mentioned, fresh air and sunlight are very essential in the care of this class of cases, and systematic open-air treatment should be carried out daily, unless the weather should positively contraindicate it. In this way the body receives oxygen, the appetite increases, the patient secures from the diversion rest of mind, and takes a new lease of life. If it is impossible to get the patient out of doors, he should be placed before a large opened window where the sun streams through, and be allowed to remain there an hour or two. If he is sufficiently wrapped up and kept out of any considerable draught, he will suffer no harm from such a procedure.

There are no specifics in the way of medicine for the cure of tuberculous bone, but iron tonics, the hypophosphites, and cod-liver oil will do no harm and perhaps may do some good.

Of the complications, abscesses at the site of the lesion and metastases furnish perhaps the greater number. In this connection it may be said that some diseased areas may be so walled off by scar tissue as to be innocuous as far as further infection goes. Abscesses, if they do not interfere in any way with treatment, should be left alone, and in very many cases may be absorbed and their contents eliminated through the circulation. If appropriate

treatment cannot be satisfactorily carried out when they are present, they should be opened and drained. A tuberculous sinus is often hard to keep clean, and the dressing required is sometimes awkward of application when apparatus has to be worn; therefore, one should not open harmless collections of tuberculous matter without considering the case from all points of view. Tuberculous disease of the lung, intestine, meninges and other parts of the body may come from a bony focus, but affections in these localities may perhaps be said to be without the pale of orthopedic surgery. In cases of chronic suppuration, due to abscess of long discharging sinuses, nephritis, caused by the prolonged elimination of purulent material, may be discovered by frequent examinations of the urine.

An acute case of hip joint disease, if put to bed with a Buck's extension pulling in the direction of deformity, will lose its troublesome symptoms almost at once, so that it would seem that a mistake in diagnosis had been made. The patient, feeling perfectly well and comfortable while thus at rest, will, in a few weeks, often chafe at the restraint and confinement. In addition to the patient's clamors to be allowed to get up, his relatives and friends will argue that it is unnecessary to keep him in bed when he feels so well. Under such conditions it is not often an easy matter to resist the pressure which is brought to bear upon the medical attendant, who, although he seeks to please the patient and his friends, will, if he does so, nevertheless be blamed should anything go wrong from a change in treatment. Therefore, the doctor should put off the day of liberty until all doubt as to the advisability of changes for the patient has passed. It can be truly said that it is better to wear an apparatus or to lie in bed a month too long than to dispense with either a day too soon. While a focus of diseased bone is present, motion, when substituted for rest, will almost always enlarge that focus, and bring a return of the symptoms for which the treatment has been applied.

The laparotomist is very careful before the removal of viscera to obtain the full consent of his patient for such removal; the surgeon uses his best skill in the adjustment and splinting of fractured bone; but even so with the exercise of the utmost care and with the most complete understanding before the operation, we know of many of the most unjust suits for malpractice conceivable. With such warnings at hand and looking to his own safety, to say nothing of what is best for the patient, should not the medical adviser not only give all possible attention to early and correct diagnosis

in tuberculous joint disease, when deformity may mean so much to the patient in after years, but also persist firmly in the maintenance of the treatment which he has established until sufficient length of time has elapsed to effect a cure?

In closing, I would call attention to the fact that all apparatus must be well applied, carefully adjusted and frequently supervised, else results may not be all that can be expected. The conservative treatment of tuberculous joints, although extended over long periods of time, in the final outcome for the patient, and in satisfaction to the surgeon, will by the exercise of care and patience bring its own reward.

REMARKS ON THE OPERATIVE TREATMENT OF SAPHENOUS INSUFFICIENCY.

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The evolution of the operative treatment of varicose veins due to dilatation and insufficiency of the saphenous, exhibits an interesting progress in simplification of technic. The shortcomings of Trendelenburg's operation¹, gave impetus to the open methods with circular incision (Schede), and to the longitudinal incision, extending the length of the leg, which in turn gave way to the subcutaneous methods of extirpation through ever fewer and smaller openings.

The operation of C. H. Mayo² met with general approval and adoption in preference to the extensive lacerations required for the older methods. A year later Kellar³, of the U. S. Army, described the method of evulsion by inversion classic in its simplicity and ease of performance. Finally Babcock⁴, in an excellent résumé of indications for operative interferences with descriptions of various procedures, described an operation which would seem to be the last work in methods of total extirpation of the saphenous system. Instead of interrupting the evulsion at the knee, in suitable cases, he removes, at one sweep, the entire system down to the ankle, by means of a modified bougie-à-boule, twenty-eight inches in length. Though we have not tried the operation, we can readily assent to its feasibility and thoroughness. However, it fails of that feature which appeals to us in the Kellar operation, namely, that the bed from which the vein is removed is untouched by instruments save at the point of entry and exit. This is a theoretical ob-

jection, inasmuch as the only possible agent of infection is the enlargement at the end of the bougie; but it is a real one none the less, and it is reasonable to remove where possible even the theoretical possibility of infection along the subcutaneous tunnel left by such operations.

Of course, these extensive evulsions "en bloc" apply only to the simple dilatations. Where varices exist, *i. e.*, windings of the vessel back on itself with sacculations, open dissection is the only resort.

The ease of removal by Kellar's or Babcock's method might provide a useful modification of Trendelenburg's operation, in that a foot of the vein may be removed with almost as little difficulty as an inch, thus avoiding recurrence through dilatation of the collaterals. We recently removed the saphenous system of a man operated upon one year before by ligation and division on both sides, of the saphenous trunk, which measure had been followed by complete restoration of the offending blood column through collateral circulation. There was no tortuosity of the vein nor adhesion of the



Probe, With Groove for Silk Ligature, for Stripping Out Saphenous Vein.

skin. The case was, therefore, an ideal one for avulsion. On one side, owing to inexperience, four incisions were required and considerable fumbling, as the vein was twice torn at the attachment to the probe, and as we failed to cut the posterior femoral branch. On the other side the entire vein, from three inches below the sapheno-femoral junction to four inches above the internal malleolus, was readily removed through three small transverse incisions. It might, as in Babcock's cases, have been done through two, save that this requires an inconvenient length of probe, *i. e.*, about two and one-half feet. The usual ecchymosis appeared along the route of the vein, but otherwise no sequelæ and the symptoms were relieved.

In employing Kellar's method we have adopted a few modifications and will describe them by way of a critical review of the details of the original procedure.

The operation is fundamentally as follows: The vein is cut down on in two places at a convenient distance apart. A probe with an eye is passed through the lumen of the vein and attached by the eye to the cut end of the vein. The probe is now withdrawn in the direction of the unattached end, so that the vein is withdrawn from its bed through its own lumen. It is unnecessary for the assistant to start the inversion with forceps as the attach-

ment of the vein to the surrounding connective tissue affords a natural means to this end.

An objection to a probe with an eye is, that the vein is prone to slip off and draw, not from the probe, but from the ligature threaded through it. A probe with a groove around it, over which a silk ligature is tied makes a firm attachment. (See Figure.) In experimenting on a saphenous trunk after removal, the vein on traction invariably tore through elsewhere than at the ligature, so the attachment was at least as strong as the vein.

In a letter appended to Kellar's article, A. Weeks suggested inserting the probe through the vein from the first incision, as a finder over the end of



which to make the second incision, thus avoiding a search for the vein at the point where the probe is to emerge. The suggestion, however, involved entering at the knee and passing upward with the blood current, an obviously questionable procedure at once avoided by passing from above downward against the current, after the vein has been tied off from the general circulation. The act has this additional advantage that the larger and stronger end of the vein is drawn against the weaker.

We emphasize the advantage of cutting subcutaneously any branches offering sufficient resistance to endanger the continuity of the main trunk. This additional source of infection is, of course, immediately dragged into the disappearing lumen and amounts practically to division of the posterior mid-femoral branch only, easily found, as Kellar pointed out, by the puckering of the skin over it or traction.

In cases of long standing, it is usually impossible to remove the vein below the knee by inversion, for

there it becomes tortuous and adherent to the skin, calling for dissection. The main trunk of the varicosities over the posterior and peroneal may be removed through a transverse incision about two inches below the first bifurcation.

Moderately firm pressure applied over the stump of the saphenous by a "figure of eight" around the pelvis keeps the stump free from blood until the intima has united and danger of embolus is passed.

(1) R. J. MILLER, JR.: The results of operative treatment of varicose veins of the leg by the methods of Trendelenburg and Schede, *Johns Hopkins Hospital Bulletin*, September, 1906.

(2) C. H. MAYO: Surgical treatment of varicose veins, *St. Paul Medical Journal*, September, 1904.

(3) W. L. KELLAR: A new method of extracting the internal saphenous and similar veins in varicose conditions, *New York Medical Journal*, August 19, 1905.

(4) W. W. BARCOCK: A new operation for extirpation of varicose veins of the leg, *New York Medical Journal*, July 27, 1907.

TREATMENT OF TALIPES EQUINUS VARUS BY PLASTER OF PARIS.*

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That the treatment of congenital talipes equinus varus requires the greatest skill in technic as well as a complete understanding of the principles involved to produce the best results, those with the most experience will testify.

Whitman says: "Although congenital club foot is an eminently curable deformity, yet perfect and permanent cure often requires minute attention to details during the entire stage of treatment, supplemented by long continued and careful supervision after the cure is supposed to be complete. No other deformity presents such a record of failures and incomplete cures, of relapses after apparent cure, of tedious and ineffective treatment by braces, after many years, and of unnecessary and mutilating operations. A few are due to unusual obstacles in the deformity itself, but by far the greater number must be accounted for by the failure of the physician to apprehend the true nature of the deformity, or by his inexperience in the practical details of the treatment."

Bradford and Lovett say: "The literature of

* Read before the Academy of Medicine (Section on Orthopedic Surgery), December 18, 1908.

club foot is too often that of unvarying success. It is sometimes as brilliant as an advertising sheet, yet in practice there is no lack of half cured or relapsed cases, sufficient evidence that methods of cure are not universally understood."

To thoroughly understand and work out the best treatment for the correction of any deformity one must know:

1. The anatomical structures and mechanical principles that enter into each deformity.
2. The technic of the operations for its correction.
3. How to prevent its recurrence.
4. How to restore the functions of the part.

The anatomy of talipes equinus varus comprises both the foot and the leg. The foot as a whole, beginning with the slightest deformity is simply adducted, supinated and plantar flexed with shortening of ligaments and tendons holding the foot more or less permanently in this position. As the deformity becomes more severe the tarsal bones become slightly twisted and curved and partly dislocated to allow the foot to assume the more deformed position.

In detail, the astragalus begins to twist in its neck at the same time if the force is great enough through its articulation and ligamentous structure, the tibia is twisted on its long axis, principally on its lower third, and the whole leg is turned inward. The force continuing, the articular surface of the astragalus becomes partly dislocated, the calcaneus is twisted, the scaphoid slipping as far as the internal malleolus. The cuboid, cuneiform and anterior part of the foot following in the general direction. Their articular surfaces all rotating to the inside, the ligaments and fascia contracting in their new relations.

We know that mechanically the easiest way to restore the foot to its normal anatomical condition is to restore the slips that the foot must have once occupied, the muscles being more thoroughly stretched in this manner and the bones more likely to be completely reduced to their normal position.

Why the varus should be fully overcorrected before the equinus is disturbed, is because in the first place we have a long rigid arm of a lever to the medio-tarsal joint and can apply the power to a great advantage, but once let the tendo-achilles and contiguous ligaments be cut or stretched and our long arm becomes very short and insecure, necessitating the calcaneus being held rigidly with our hand while we correct the varus, a practical impossibility in a severe case, where before we had the tendon and ligaments to do the work for us.

Having brought the foot on line with the long axis of the leg, we should expect to find the plantar fascia, the ligaments on the inner side of the foot stretched and torn, the tendons somewhat lengthened, but the facets and dislocations altered only to a slight degree as the sum of the motions between these articulations is considerable and all the slack must be taken off before any reduction takes place. These assumptions are found to be verified in practice.

Now to reduce these partial dislocations and to make new facets more to the outside even than normal, as well as to further stretch the tendons and ligaments we must overcorrect as far as possible by abduction and inversion, being extremely careful not to disturb, in the slightest degree, the equinus or to evert the front part of the foot too soon. In this overcorrection we carry the outside edge of the foot against the external surface of the leg. If the rectification has been properly done to this point the equinus still remains and often some plantar flexion. The foot should now be slightly everted and abducted and gradually flexed upon the leg. By this procedure we will be able to stretch the tendo-achilles and reduce the forward dislocation of the trochlear surface of the astragalus. In very obstinate cases the head will either not be fully reduced or the tibia will be crowded against the front of the astragalus, preventing flexion. They can always be recognized by the marked resistance in this direction. In correcting the equinus great care should be taken not to flex the foot too much at the medio-tarsal joint or we will get a foot rounded upon the bottom and functionally poor, the equinus never being fully corrected. This can be avoided as far as possible by applying the power near the medio-tarsal joint.

The degree of deformity should be recognized at the beginning not only for an accurate prognosis but for the extent and severity of the treatment. These varieties range from slight cases with the foot comparatively long, narrow and non-resistant, that can be cured without any special hurry or pain to the child, to those that are very short and broad and plantar flexed with great dislocation of the bone and facets correspondingly out of place that tax all the powers of one's ingenuity to get good results.

In the severer cases there is often a dry crease at the inner side of the foot, sometimes at the back of the heel, always holding that part of the foot more firmly.

There is another severe variety in which the foot and leg are very fat, necessitating special de-

vices to keep the plaster from continually slipping. This is a class of cases in which the skin at the inner side of the foot is more contracted than usual, turning with a very little force, the progress being necessarily much slower. As a general rule it can always be said, the more the varus and plan-tar flexion, the severer the case.

TECHNIC OF THE OPERATION.

It is impossible to give any definite limit as to when a child is too old to be treated by stretching and plaster of Paris. One child at two months may be more resistant than another at two years, each case being judged by the force necessary to overcome the deformity. I have shown a severe case that had practically no treatment until nearly five years old and yet attained perfect anatomical correction by this method. I have another at four and one at two years of age when first treated, all being resistant deformities.

All club feet, I believe, should be shown to the surgeon at one week of age, since the size and resistance increases very rapidly in a well nourished child, often doubling in the first four weeks. Over-correction can thus be accomplished with half the force if we begin early. Slight cases can be postponed until a month old, instructing some one in the meantime to stretch them daily.

Whether an anesthetic should be used also depends upon the force necessary to correct. The anesthetic relaxes the muscles and one is not deterred by the apparent suffering of the patient. Two or three times as much can be accomplished in a very resistant case by its use at each treatment. Before the plaster is applied each time, the foot should be thoroughly stretched, bathed with alcohol and powdered. The stretching is done so that more rectification can be done at each sitting, it being very hard to properly apply the plaster bandage and use much force on the correction at the same time; besides, if much force is used at the application of the plaster, the pressure on the inside of the foot will be sufficient to cause a restriction of the circulation with a resultant excoriation. In stretching the right foot, the left hand grasps the anterior part from the inside. The right hand supports the calcaneus and ankle joint. The foot is bent at the medio-tarsal joint over the little finger of the right hand. This procedure will reinforce the tendo-achilles and get the maximum amount of force where it is most needed to correct the varus. If the right hand grasps the leg above the ankle joint, in many cases the foot will pivot about the tendo-

achilles without correcting the varus sufficiently and is of all things what we wish most to avoid. Press always as much as possible on the plane of the bottom of the foot, especially in the first part of the treatment, since obviously you can more easily correct the varus in this manner as the power is all applied in one plane, and the whole bottom of the foot is kept in proper relation to the parts.

How much the position of the foot should be improved each time, depends upon the resistance of the case, the amount of laceration of the internal structures, how far the skin will stretch without tearing and to what extent the circulation will adapt itself to the changed position. The only general rule that can be laid down is to be sure you have made substantial progress each time. If you do not see much change in the position of the foot after the plaster is applied, do not leave it with the expectation of better results next time, for more resistance is met at each treatment.

After the foot has been stretched, bathed and powdered, small pieces of cotton are put between the toes, and a larger one on the inside of the foot. A 1½-inch canton flannel bandage is used and applied in the direction of a right handed screw to the right foot and a left handed one to the left foot. Thus, the bandage itself tends to correct the deformity. It should extend from the tip of the toes to the knee joint. The reason why the foot and the leg should not be encased in cotton as is often advised, is that you cannot get as good a position when you are applying the plaster of Paris on account of lack of adhesiveness between the cotton because you are apt to lose sight of the exact position of the foot; it is more liable to slip and the foot cannot be moulded as well while the plaster is hardening.

When applying the plaster keep the foot as much corrected as possible and make the turns over the same deviations as the bandage. Here of all places have each layer smooth. Use a two-inch plaster bandage and put on only about four thicknesses. Iron it out well over the outside of the ankle, not only to remove any irregularities of surface, but to improve the position.

The thinness of the bandage will allow considerable amount of moulding of the foot while setting, and is not as severe on the foot, often giving away just enough if there is too much pressure.

Even in older children much more correction can be accomplished by this method and after sitting, as many additional bandages can be applied as are necessary.

The number of plasters needed to fully correct the deformity depends upon the age and severity of the case. In one of a moderate degree four or five are sufficient, while one very resistant might require twenty.

It is important to remember that if you do not get considerable improvement each time, chloroform should be given and a thorough and forcible stretching done.

My experience has impressed me most forcibly that the correction must be hurried, a plaster continually getting loose after a few days, left off on account of a slight excoriation or perhaps a little eczema will soon get a foot in condition where it cannot be corrected without some cutting operation.

Plaster applied without cotton and well moulded will seldom slip, but if it should show a tendency to do so, two adhesive straps along the leg, the last inch being incorporated in the plaster, will prevent it. This device should not be neglected, for a foot that continually slips will become gradually worse instead of better. Each plaster should be changed in from one to three weeks. The older the child and the more severe the stretching the longer they should remain on to allow the swelling to subside as the foot stiffens up greatly while this is present, and very little can be accomplished.

How much pain should the child suffer? If the case is only moderately resistant the patient can be treated almost without pain, but in severe cases they will often cry more or less the first two nights. If longer than that, there is too much pressure. Mothers do not mind the suffering of the child as much as one would suppose and seem to fall in readily with the suggestion that the more the baby cries the more good it is doing him, often saying of another physician with great disgust, "Why he never even made the baby cry." They seem to think if they are not getting hurt there is not much being done, which, in many cases is true. For that reason it is often better to start in vigorously at first, not only for the baby's ultimate good, but it saves trouble if you have to begin later.

In some cases where ideal results have not been obtained either from the fault of the operator or unusual difficulties of the deformity, special devices can be used to advantage.

A board incorporated in the plaster at the bottom of the foot, applied with as much force as the circulation will tolerate, will do a great deal to flatten out a rounded sole.

In resistant cases of two or more years an oval piece cut out of the plaster at the instep, leaving

only a narrow strip intact at the heel, will allow more correction every two or three days without removing the plaster, thus insuring rapid progress.

As the age of the child increases the circulation is more disturbed by the correction force, and after the plaster is thickly applied, a cut can be made along the whole outer border of the foot from the little toe to the leg without losing any of the correction and any constriction can be easily relieved.

How to prevent the recurrence of the deformity? This is, I believe, the most important part of my subject and nearly all of my cases shown are to illustrate this point.

1. Practically all cases, if competently treated in early infancy, can be fully overcorrected.

2. Every case of any severity, no matter how well corrected in early infancy, will tend to relapse.

3. Every observer has noted, the older the child the less liability of recurrence.

From these three statements we can draw the perfectly logical conclusion: That if we fully correct a foot in infancy and keep it corrected long enough, there will be no practical liability of its recurrence.

This being true, the answer to our question, How to prevent recurrence? revolves about the point, how long shall we keep up our correction, and incidentally, what is the best way?

Of course, a foot can be corrected, and then held in a brace a number of years, until there is no tendency to recur. The disadvantage of such treatment is that you have no margin of safety and must struggle against a relapse, at the very edge, as it were, of a recurrence. While if children can begin in infancy and go from one to three years before the first stage of recurrence manifests itself, and then receive stretching and plaster of Paris until again overcorrected, and so on until there is no further tendency to relapse, it seems to me such treatment is much to be preferred, since the length of active treatment by apparatus is less, other things being equal, the leg should functionate and develop more rapidly.

I have carried out a treatment embracing these ideas at the Hospital for Ruptured and Crippled for the last seven years. In detail it is this: Fully overcorrect the foot as soon as possible, hold it in the corrected position, when it gives very little pain or discomfort to the child, from 2 to 6 months, depending upon the age and severity of the case. It can then be left free, the parents stretching it a number of times daily, returning to the physician every two weeks. The moment that overcorrection

requires any force it should have a plaster for two weeks, then again left free, the intervals between treatment growing longer and longer, until once a year will be sufficient. After the first period of correction there need be little pain or trouble, if the physician did not wait until decided retraction had taken place.

In regard to overcorrection, some seem to think I overdo it. The best answer I can give is that of over 150 cases I have personally treated, overcorrecting them all to the greatest degree, I can say I have not seen one I do not wish more overcorrected than I find it at the present time.

How to restore the function of the foot? To restore the functions of the weakened muscles they must be allowed to contract as much as possible, which can best be done by taking all strain from them. Overcorrection will best accomplish this and in quickest time possible, nor should the weakened muscles be allowed to lose what they have gained by having any great tension against them. Voluntarily exercise of these muscles should be taught as soon as the child is old enough to understand.

In conclusion, I would say I believe we should tell all mothers at the beginning that all cases will relapse even if apparently cured if they are not treated from time to time until the child is nearly ten years old; that relapsed cases are harder to cure than at the beginning; that stretching and application of plaster will have to be done when the occasion arises until there is no further need.

If this is fully impressed upon the mother and physician the extended treatment will be of further interest as well as satisfaction to all concerned.

159 LEXINGTON AVENUE.

A METHOD OF ENUCLEATING THE APPENDIX.

In cases operated upon for appendicitis, when it is found that no meso-appendix exists, the simplest method of enucleation is as follows: Make a circular incision through the serous coat near the base, and then introduce an ordinary blunt-pointed hook, the lower end of which has been bent at a right angle, and encircle the stump in a similar manner to that in which an aneurysm needle embraces a vessel, make a gentle movement downwards in the direction of the appendix, and usually in a few seconds the enucleation is complete. The stump is then treated in the usual manner, and as there are no vessels to tie, the whole operation is completed in a comparatively short period.— L. HERSCHEL HARRIS, in the *British Medical Journal*.

PRACTICAL DEDUCTIONS REGARDING WEAK FOOT.*

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Numerous treatises have been written concerning this very common deformity. All point more or less to the same goal; that is the possibility of cure with the exercise of special care, scientific treatment and restitution of ideal conditions. No one can deny that the treatments thus expounded show marked difference of opinion, and are in their variety and number very confusing. It is, therefore, hardly surprising that from this jumble of ideas the busy physician will turn with relief to a concise, attractive pamphlet sent him by some shoe firm which glowingly describes the advantages of their particular arch spring or prop. The application of the same is simple; its use brings relief to the sufferers, although frequently only temporary and condemning him to continuous brace wearing. But how many people care about anatomical cure, so long as they can have immediate relief, unless the probability of recurrence in more severe measure is explained to them. Again in following these many essays it appears that much energy has been applied to correction of existing deformity, and little to its prevention. Careful examination is made in the schools of children's eyes, throat and back, at the same time the feet are neglected. It is highly probable that weak foot can have its start in childhood, pass unrecognized and without symptoms on until adolescence, and then through some cause appear as an apparently primary deformity. Grown up countrymen whom the writer has frequent occasion to observe, although exposed to the same or increased amount of weight bearing and foot strain in their various occupations and condemned to the use of as mis-shapen shoes as ours, are comparatively free from painful foot affections. Their child-life was an untrammelled bare-footed one, the muscles and soft yielding bones developing as nature required. So long, therefore, as our children from the earliest days of walking are by environment forced to wear shoes, it should be a duty to see that they are correctly shaped and well fitted.

Weak foot is caused in many different ways: concisely speaking, anything from within or without, above or below that tends to distort the normal

* Read before the Section on Orthopedic Surgery, Dec. 18, 1903.

alignment of the active foot structure is to be thus considered. Frequently the causative factor is of greatest concern, as its evil effect must first be eliminated before local, reconstructive treatment can avail. The patient's history carefully taken and considered and thorough examination of the exposed feet and legs in the stages of rest, passive weight bearing and active propulsion, as well as in regard to limitation of active normal range of motion and resistance or freedom to passive manipulation, are our safest guides in deciding upon the treatment to be employed.

The remedial measures at our disposal may be for convenience outlined as follows:

1. Supportive: corrective.

Such as, *Shoes* of proper shape and size, more or less built up along the inner border.

Adhesive plaster strapping: so applied as to hold and support the foot in correct position while walking.

Braces: Of which the writer has found the Whitman brace the most efficient and satisfactory.

PLASTER-OF-PARIS RETENTION.

2. Passive and Active: corrective.

Twisting: according to the degree of spasm and pain either undertaken with or without an anesthetic.

Exercises: preferably done daily by the patient, following careful administration.

Mechano-therapy, an active corrective procedure undertaken in some pendulum apparatus.

3. Adjuncts to Treatment:

Massage,

Hot foot baths: preferably in water to which some sea-salt was added.

Bier congestion: In very spastic flat foot, with inflammation, I have included the compression method with active and supportive treatment. Its effect in decreasing pain has appeared very satisfactory in several cases.

In flat foot we meet the severe type of foot deformity. The time of prevention is passed, supportive measures useless on account of the unyielding nature of the condition; correction is indicated, either immediate or gradual. By immediate correction is meant reduction of deformity under anesthesia, and in over correction plaster of Paris splinting. After several weeks, in which the encased foot is well used, the dressing is removed and the usual active and supportive treatment begun. Gradual correction is undertaken in the pendulum apparatus, its use is painless, its corrective action

increased with the progress of the case. Besides bettering the deformity and lessening the spasm the systematic use of the apparatus markedly increases the strength of the muscles of the foot and leg. The forcible reduction under anesthesia with fixation in the over corrected position would be ideal were it not for the physical and mental anguish of those afflicted. Many a person will refuse the procedure and suffer on, whereas they would gladly have submitted to the necessarily slower method of correction in some efficient pendulum apparatus, with an ultimately equally good result.

Weak foot is essentially a condition of disordered normal function due to structural weakness. The height of the arch is of secondary importance so long as correct functional use is accomplished and any dislocation in the relationship of the tarsal bones is prevented.

In combatting the cause as well as effect will the treatment be successful. Thus the occurrence of a symptomatic or actual shortening of the tendo-achilles must be kept in mind and overcome, the possibility of an old forgotten metatarsal or tarsal fracture eliminated by means of the x-ray in a refractory case; and the aggravation of local symptoms by a possibly unnoticed general disorder understood.

In overcoming spastic weak foot, too much routine of treatment is an error. Undoubtedly this condition attracts, in a pair of powerful hands, a strong desire to twist, but in considering the general mental and physical condition, as well as the local deformity and resistance, and manipulating accordingly, the results obtained will be just as good and much more satisfactory to your patient. Adhesive plaster strapping retaining the corrected attitude of the foot in the act of walking between treatments, is indicated until all spasm has been overcome, but it should be changed frequently, at least once a week, otherwise the skin becomes very irritated and the dressing useless from overstretching. Poor local circulation being one of the usual complications of spastic weak foot, additional continuous congestion through too generous an application of adhesive plaster appears rather harmful than otherwise; encircling the entire foot, and ankle with a figure of eight dressing, tightly applied, is therefore hardly commendable.

In respect to brace treatment, a thorough knowledge of the anatomy of the foot must underlie the shaping of a proper plate. The large variation in the shape of normal feet, the many differences in the height of normal arches and the complexity of the muscular distribution must contra-indicate the

careless permitted trimming of the cast by the brace maker. The brace should never be applied while spasm and limitation of motion persist; marked thickening of the skin resembling bunion over the astragalo-scapoid articulation following its use is probably due to overlooking this fact. Brace treatment has one shortcoming in that the patient thinks, that with the disappearance of pain and application of the support, matters will henceforth shape themselves and carelessly breaks all rules governing future occasional inspection and further active home exercises.

Advice in regard to these should be thorough and governed by the general physical condition as well as the local affection. One cannot, for instance, expect a person afflicted with arterio-sclerosis to jump up on the turn in toes, nor an infirm heart to dance or ride a bicycle.

Open, operative intervention is only indicated when paralysis of certain muscles prevents active resumption of the normal attitude, or where primary deformity (fracture; tuberculous disease) makes correction impossible. Weakening an already poor structure by removal of one of its component parts although at first apparently helpful, can only be passing benefit.

The prognosis is dependent upon the severity and time of existence of the foot affection, upon the correct interpretation of the condition in regard to the curative measures to be employed, and their future, systematic and consistent execution.

129 WEST 118TH STREET.

METASTATIC CARCINOMA OF THE RECTUM.

In certain forms of carcinoma of the abdominal organs, notably gastric carcinoma, and in some cases of tubercular peritonitis, implantation metastases in Douglas' pouch are common. These metastases impinge upon the rectum and may infiltrate its submucosa, causing a peculiar shelf-like tumor on the anterior rectal wall, readily felt by the examining finger. In cases of gastric carcinoma this may be an early metastasis, and occurs especially in males. In such cases the primary tumor may be latent and the metastasis may be large enough to cause symptoms of obstruction. It has been mistaken at times for rectal carcinoma and has been removed as such. The not infrequent occurrence of this rectal shelf makes it a diagnostic and prognostic sign of a good deal of importance, and warrants the statement that in no case of obscure abdominal disease should a rectal examination be omitted.—GEORGE BLUMER in *the Albany Medical Annals*.

THE VERSATILE OMENTUM.*

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The importance of the functions of the omentum in surgical practice is too frequently overlooked. We have been accustomed to regard it as an apron with two outer layers of peritoneal membrane between which were numerous glands, some fat, and a rich supply of bloodvessels. It is supposed to act as a great protector of abdominal viscera against injuries, heat and cold, and to equalize blood pressure through its immense venous reservoirs. We know that it is a source of annoyance to the operator through its persistence in trying constantly to attach itself to any wound in the abdominal wall, and that it frequently eludes the surgeon's vigilance, and becomes entangled in the peritoneal sutures, thus adding to the number of post-operative adhesions.

The path of the lymph stream from the abdominal cavity is largely by the omentum. Lodi states that the omentum plays an important part in the absorption of both microorganisms and solid particles in the peritoneal cavity. Durham found in an animal killed twenty minutes after an intraperitoneal injection of bacteria that the omentum contained bacteria, while the peritoneal cavity was sterile on culture.

When the omentum is irritated by any cause, there is a transudation onto its surface of an exudate, composed of white blood cells and fibrin, which produces a stickiness that enables the omentum to become attached to or encapsulate the offending part. If pathological germs are too numerous or virulent, then permanent adhesions are formed or local abscesses may result. It is believed that the staphylococcus albus appears first after an injury, and by its rapid dissemination and minor irritation induces the rapid transudation of phagocytes from the omentum sufficient to overcome the more virulent germs which appear later. The busy omentum seemingly possesses curiosity and may be found investing any inflamed organ or denuded gut. Its sticky quality makes it very competent to adhere to intestines which have been wiped or handled by dry gauze. On making an abdominal section, the rigid or adherent omentum points without failure to the pathological center, and it is time saved to immediately recognize the reliability of such a guide. The knowledge of the ability of the omentum to resist the germs of infection should

* Read before the Western Surgical and Gynecological Association, December, 1908.

not make the operator careless in separating omental adhesions, since they too often simply form a lid or covering for immense pus vaults, filled to bursting, even though walled off from the general peritoneal cavity.

The experiments of Emanuel J. Senn, in 1903, with dogs, show that the omental membrane of these animals is not competent to combat infection or leakage from intestines as it is in human beings. Though the omentum in dogs is of greater area in proportion, it is much thinner, and less richly furnished with glands than is the human apron. It is known that in human or other animal, the omentum is capable of taking up one-half of one per cent. of the body weight of fluids per hour, partly by blood stream and partly by lymphatics. This quality makes the omentum a valuable substitute for the drainage tube. The absorption of intraperitoneal fluid is proportionate to the activity of intestinal peristalsis. Reduction in temperature of the peritoneal cavity diminishes the absorptive power of the omentum, thus contraindicating the use of the ice pack over the general abdominal cavity during the early stages of pus formation. Rogers demonstrated the protective rôle of the omentum in guinea-pigs, two months after he had removed the omentum, by injecting a virulent culture of staphylococcus aureus, with death in twenty-four hours, while controls of the same weight with simple laparotomy received the same culture and survived. Experiments by de Renzi and Pirrone show that the circulation of the spleen may be cut off or tied off and the omentum will envelop and absorb the spleen, while if the protecting action of the omentum be prevented, the experiment results in death to the animal. Other findings show functional relations between spleen and omentum.

It is my habit to use the omentum as a patch for wounded intestine and denuded peritoneum or to fill in ulcerations which are not readily or safely closed. When large pus cavities are opened, after removing the pus and wiping contaminated parts with iodoform gauze, the omentum is in all cases, where possible, made to adhere to the infected part instead of using a drainage tube.

In every case where my operations are complicated by suppurating areas or penetrating intestinal wounds, leaking ureter or obstruction of the bowels, the part infected is enveloped as far as possible by the omentum. I often cleanse the pus cavities with peroxide of hydrogen or leave a light sponging from iodoform to inhibit the pathological germs until the omentum has time to marshal its

reparative forces. In post-cecal appendicular abscesses, with free flowing serum, I insert drainage posteriorly for one or two days. The question of drainage is often solved for me by the condition of the omentum. If the omentum is large, thick and free, and easily plastered to the infected area, I do not drain. If thin, short, curled up, or already much damaged, I drain from the most dependent part of the infected area, and when possible keep the outer end of the tube the lower. To me the omentum seems an entity. It apparently searches for opportunities to render first aid. This very virtue contains its element of danger. Too often the adhesions formed through its protective efforts are permanent, and may restrict free peristalsis, and even cause obstruction of the bowels. The reverse is true when the good offices of the omentum are used by inserting it between divided adhesions formerly connecting loops of intestine. In these cases, as resolution progresses, the adhesions disappear.

In progressive tubercular or malignant disease of abdominal organs, when the utility of omentum is finally overcome, ascites appears and warns the surgeon of damage to his most efficient aid. It is then that celiotomy should be done in the less serious affections and competent and complete drainage of the free fluid effected. The omentum should be liberated or unrolled, teased down in the abdomen as far as possible, until its function of absorption is restored. If firm adhesions about the ovaries, I often sever the omentum close to the enveloped organ, leaving the distal portion to assume the functions of the local peritoneum, and when the omentum is not long enough to reach freely into Douglas' cul-de-sac, a patch may be severed and transplanted like a skin graft.

Illustrating types of condition in which these functions were most beneficial, I have selected three cases from hundreds in which I have utilized this most important organ.

CASE I. Operated upon April 15, 1904, for the removal of a uterine fibroid, complicated with a long-existing pus tube, the vitiated bowel wall gave way, tearing completely across the sigmoid juncture with the rectum. There was so much loss of the structure of the intestinal wall, due to the degeneration from contaminating pyosalpinx, that an attempt to suture the gut proved fruitless. There was no peritoneal membrane left on the wall, and the muscular coat would not hold a suture. A Murphy button was introduced and held the approximated ends, while an envelope was made of omentum extending over two inches along the bowel and sutured around the anastomosis. A colostomy

was done in the left inguinal region and fecal evacuations followed through the artificial anus. Three weeks later feces were expelled by rectum, but the button was retained and explorations from above and below showed all the normal coats of the bowel had separated and the sleeve of the omentum made a pouch detaining the button. This was finally removed by the use of long forceps introduced through the artificial anus. The colon was then detached from the abdominal wall and the wound in each closed. This patient could not be said to have an uneventful recovery, since on October 18, 1904, I made a trip to Milwaukee, and with Dr. Fitzgibbon, operated upon her in Trinity Hospital for appendicitis. Again, in February, 1905, I drained Douglas' pouch for a purulent accumulation. On December 13, 1907, I operated upon the right kidney for calculi, complicated by nephritic abscess. The patient at this writing appears to be in normal health. She perfectly understands the pouchy condition of the bowel and watches closely the consistency of her dejections, constantly keeping them semi-solid.

CASE II.—Dr. S., 64 years of age, six feet tall, weight 250 pounds; teetotaler and of perfect habits; active in practice; was a sufferer for years from hepatic colic. Following a severe attack, his temperature was above 105° F., several days. The doctor entered the Swedish Hospital with a diagnosis of empyema of the gall-bladder and biliary calculi. Operation the following day. The gall-bladder was adherent to the posterior abdominal wall, and was reached with the greatest difficulty. After walling the abdominal tissues with gauze, the gall-bladder was aspirated of a large amount of bloody, feculent pus, after which many angular gall-stones were removed. The patient's condition was such that I did not attempt to remove the gall-bladder or even free it from its adhesions, but instead fastened a rubber tube, one-third of an inch in diameter, into it, and completely enveloped the tube with the omentum up to the anterior mural peritoneum. The rubber tube came away on the tenth day, but the fistula made by the omentum remained patent five weeks, and has since reopened several times. The point is, the ability of the omentum to make a biliary duct from posterior to anterior wall perfectly protecting the general peritoneal cavity against a virulent infection then existing in the gall-bladder.

CASE III.—Miss L. T. entered the hospital, August 26, 1908, with an attack of appendicitis. She had a history of having swallowed a pin and a needle some weeks previous. The pin had been found in the stool three weeks after being swallowed, and the parents supposed the needle had also been expelled with the feces. During the operation for removal of the appendix, I noticed a bunch of the omentum. Obeying my rule to follow the index of the omentum, I found the needle, which had escaped entirely from the intestinal tract, and was enveloped in the omentum.

In conclusion, I may be allowed to say:

1. That it seems sensible to follow natural and physiological efforts in our attempts to cure.
2. That the functions of the omentum to combat infection and drain dangerous elements from peritoneal cavity are well-established.
3. That we should aim to secure the assistance or such functions, and at the same time use our ingenuity to prevent permanent adhesions that might be harmful.
4. That we should deprecate the wasteful amputation of parts of the omentum appearing redundant or occupying the hernial sac.
5. That damaged, over-affected or strangulated portions of the omentum should be removed, in order that greater utility may be possible from the portion remaining.

CONGENITAL SACRAL TUMOR WITH REPORT OF CASE.

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Congenital sacral tumors belong to the group of teratomata. They may or may not be associated with meningocele. Their mode of origin is still under discussion. One school claims that they are the result of misplacement of germinal fragments, while others contend that it is of bigerminal origin, *i. e.*, that such a tumor represents an incomplete monstrosity or twin.

The data obtained from both the gross and microscopic examination of these tumors gives evidence in support of either of these claims. Those who believe in the monogerminal origin hold that cell inclusions occur when the dorsal surface of the early embryonic mass folds itself to form what in the future is to be the spinal canal. The fact that the skin attaches itself very early in the sacrum, and may thus become inclosed below the cutaneous surface, is thought to be a strong reason for the occurrence of these dermoidlike tumors.

On the other hand, the finding in these tumors of such formations as a complete limb, portions of a skull, eyes, trachea, etc., is argued by the bigerminal advocates as proof that the existent fetus had in its early career included the products of another fecundated ovum.

However it be, these growths are cystic, have a fibrous basic structure, and contain various secretions, chiefly the fatty, grumous material so characteristic of dermoids. Because they sometimes contain neuroglia and ganglionic cells, they have also been called *neuroepitheliomata*. In size they may vary from a pea to that of a child's head.

They are usually situated in the mid-dorsal line of the sacrum (which bone may at times be reduced to a mere shell of horseshoe shape) at its junction with the coccyx. If the tumor be at all large the coccyx is absent.

Sometimes these tumors are situated in front of the sacrum or coccyx, and then give symptoms of intrapelvic pressure. Cases are on record where the latter growths have discharged their contents into the rectum. Steintal quotes Kroner and Marchand (v. Bergmann, System of the Practice of Surgery) in a very interesting report of a girl, 20 years of age, who had an anterior sacral meningocele, closely resembling a cyst of the broad ligament. This tumor was first aspirated, then opened and drained; death followed with symptoms indicating meningitis.

Of considerable interest are those cases where a congenital fistula has existed in the sacral region, proving refractory to the ordinary surgical methods, but upon radical operation found to communicate with a teratoma, either in the sacrum itself or in the presacral tissues. In one such an instance, recently reported by Keen and Coplin, the x-ray demonstrated the presence of extra segments of lumbar vertebra besides fetal parts of the original teratoma. From the data of their case the existence of a triple monstrosity may well be assumed.

Though classed among the benign growths, sacral teratomata possess an element of danger which well-nigh borders on malignancy. Their proximity and perhaps communication with the meninges might bring about severe complications should the tumor by reason of its low vitality become in any way infected. And these tumors *do* sometimes ulcerate; when that occurs, and infection follows, the latter is most difficult to arrest.

From a prognostic standpoint it is of the utmost importance to know whether or not the growth communicates with the meninges. If it does the prognosis is correspondingly unfavorable.

CASE.—Baby S. Kindly referred to me for operation by Dr. J. F. Simpson. Age 3 months. Presents a tumor the size of her own head, attached by a broad pedicle to the left of the median line in the sacral region, extending from the spine of the first sacral segment to and below the coccygeal region (Fig. 1). The tumor is rather tense, of cystic "feel." The skin over it is thickened and presents a few minor cysts varying from a split pea to a small plum in size. While fluctuation can be obtained, it is not communicated to the fontanelles. There is no paralysis and the child appears bright and well nourished.

There is no analogy to this case in the families of either the father or mother. A few facts in the history of the mother may be of interest in connection with the existent abnormality. She was 28 years old at the birth of this child, it being her first pregnancy. She had never been seriously ill before, except that at the age of 17 she injured herself by falling from a step-ladder, due to a sudden faint feeling. Thereafter she was confined to the house for six months, for even upon moderate exertion syncope would follow. This state gradually wore away. She was married 20 months before she missed her first menstrual period. At the end of the third month of pregnancy, she thought she would have a miscarriage. Had vaginal bleeding, lasting about four hours, during which time nearly a pint of blood was lost. A month and a half later she fell twice and both times struck at the end of her spine, to which impression she attributes the deformity on the back of her child. In the seventh month of pregnancy, she fell from a distance of about four feet, striking quite heavily on her right hip.

With the exception of these mishaps her puerperium was normal and so was labor. The mother



Fig. 1. Showing Sacral Tumor Before Operation.

did not see the growth on the child's back until two weeks after her confinement, and at that time it was the size of a large orange and so transparent that "you could fairly look through it."

Operation was performed four and one-half months after birth. This consisted in a curved incision made on either side of the base of the tumor with the idea of securing sufficient flap to cover in the remaining raw surface after the tumor's extirpation. In reflecting back the flaps the interior of the tumor was penetrated and found to consist of a group of multilocular cysts containing thick sebaceous material. After removing the tumor it was found that there was a defect in the coccyx through which the wall of the rectum could be seen to bulge when the child attempted to cry. (Allowed to come out of surgical anesthesia for necessary reasons.) The defect was closed over by suturing the fascia on either side. The skin was closed and sealed with collodin, gauze dressings being purposefully omitted because of the proximity of the rectum and consequent danger of infection.

The age of the child and length of the operation

formed a serious problem in the administration of a general anesthetic. By the skilful administration of warmed ether and oxygen in the hands of Dr. Barnet Joseph the patient was kept under narcosis for one hour and fifteen minutes without the least sign of shock or untoward after-effects. The wound was completely healed in ten days and the happy results are shown in figure 2.

If, when confronted with such a case, spina bifida can absolutely be ruled out, the question naturally arises, are we dealing with a malignant neoplasm. The chief diagnostic index of a malignant



Fig. 2. Showing Result After Removal of Sacral Tumor.

tumor is its progressive growth. This, of course, is absent in a simple congenital sacral tumor. However, Murphy observes that sudden enlargement may occur, due to a mild infection which does not frankly manifest itself, and may be taken for excessive neoplastic activity. This author further observes that although these tumors are very properly regarded as benign, it should be remembered that they sometimes contain testicular and mammary tissues—structures which may easily undergo malignant degeneration. In the case at hand the tumor grew from birth on. This growth, in my opinion, was due to accumulating sebaceous secretions of the skin, because there was absolutely no evidence of infection.

Spina bifida usually carries in its train cardinal symptomatic features which should prevent error in diagnosis—these are paralysis, convulsions, and more or less of hydrocephalus. Pressure on such a tumor produces a bulging of the fontanelles. The child's mentality is observed to be seriously impaired.

X-ray examination may go a great way to assist in making the diagnosis.

Prognosis is good in proportion as the tumor is simple and in little relation with the structure in the spinal canal. Generally speaking, it is well to keep in mind Tedenats' figures with regard to the danger of these growths. He claims that three-fifths of the children so affected die before they reach their third year from surface ulcerations and consequent infections.

SURGICAL TREATMENT OF EPILEPSY; WITH REPORT OF A CASE.*

G. F. SHIELS, M.D., F.R.C.S.E., L.R.C.P.

NEW YORK CITY.

In cases of Jacksonian, or true focal epilepsy, where there are distinct localized symptoms referable to one or more of the motor centers grouped about the fissure of Rolando, surgical interference is not only clearly indicated but is followed in many instances by the very best results. True, it often happens that excision of a given center will be followed not only by the cessation of the epileptic seizures but also by a paralysis of the motor district over which the center presides. Let me urge that this possible effect should be clearly explained to the patient or the friends, otherwise, the surgeon is liable to be unjustly and severely blamed when the patient awakens to find himself free from epilepsy but with a paralysis in its place.

It is not with this form of epilepsy, however, that we have to deal in the present instance, but with a general epilepsy of peculiar interest which occurred in the practice of our colleague, Dr. C. P. Byington, of Ossining, who has kindly supplied the medical history, and whose permission has made it possible for me to present this report.

Mr. X., aged 30, ten years ago was struck above the right eye with the handle of a stable pitch fork; the blow caused a depressed fracture over the region of the frontal sinus, and left an adherent skin scar. From this injury he completely recovered, and for ten years he continued in the enjoyment of apparently good health. Suddenly on December 14, 1908, he began to have a series of epileptic convulsions numbering from two to five or six daily, mostly general in character, though at times they were more marked on the right side of the body.

Examination showed the patient to be free from renal or other disease; there was some constipation and evidence of imperfect gastro-intestinal function which was attended to by the administration of

* Read before the Westchester County Medical Society, January 19, 1909.

eliminatives, which treatment was followed by no improvement in the condition. A peculiar clinical feature was a persistent bradycardia, the pulse rate being from 46 to 58 per minute.

Taking into consideration the injury and finding nothing in the individual or family history which would explain the occurrence of the epilepsy, Dr. Byington did me the honor to consult me as to the advisability of surgical interference.

Basing my opinion upon the fact that as far back as May, 1894, (*Sajous Ann. Univ. Med. Sci.*, 1894) I had a case of an epileptic, who during a fit fell and fractured his skull, and that after trephining and removing an extensive portion of the bone over the Rolandic fissure, the patient remained free from seizures for some time; and another case of a young German who was developing epileptic insanity and whose relatives, hearing of the first case, requested an operation, with the result that after exposing the Rolandic fissure on both sides of the brain and thoroughly pricking the cortex with a sharp needle, he remained free from all epileptic manifestations for many months; and the further fact that in my capacity as Visiting Surgeon to the State Hospital for the Insane, King's Park, L. I., I have had repeated opportunity of witnessing the beneficial effect of any surgical procedure in epileptics; I advised operation, with the statement that it might prove only temporarily successful.

While Dr. Byington's case could in no way be designated as Jacksonian in nature, still the traumatism and the lack of any other causative influence, made it seem just to associate the present outbreak with the old injury. There was, moreover, a very promising feature in this instance, *i. e.*, the patient had not had time to acquire what Rosanoff so aptly describes as the epileptic habit.

Accordingly on November 24, 1908, in the presence of the staff of the Ossining Hospital, the patient was anesthetized and a flap raised over the seat of the aforementioned depressed scar. With mallet and chisel and the de Vilbiss rongeur, an opening was made in the skull approximately the size of a silver dollar. The inner table was depressed and the dura mater was found to be adherent to the bone for some distance, there was no sign of pulsation. Upon freeing the adhesion, pulsation was immediately established. After trimming away spiculae, the wound was closed, without replacing any of the bone.

The patient made an uninterrupted recovery and has had no epileptic manifestations since. It is worthy of mention that the pulse became more rapid after the operation, the bradycardia having disappeared.

Taking the case as a text I beg the privilege of expressing a few short comments anent the subject.

1. Fourteen years since, I was of the opinion that, cortical irritation being the acknowledged cause of general idiopathic epileptic explosions, counter-irritation by pricking the brain over the motor centers might bring about a cure. Since that time I have entirely given up this view, and am now of the opinion that any surgical procedure, even a skin incision, will often, for a time, check epileptic manifestations. I can offer no explanation of this phenomenon, but simply state that it is an oft-observed fact in the experience of others as well as myself. Even the administration of an anesthetic without operation is not infrequently followed by a period of freedom from symptoms over days and in some cases weeks or months. These facts probably explain the apparent cures brought about by partial removal of the thyroid gland. Unfortunately there is no certainty of a permanent result and in most cases sooner or later the convulsions return.

2. In cases such as the present one, especially where an epileptic habit has not been established, I advise operation over the seat of the old injury and the relief of existing adhesions or other cause of pressure. These cases promise better results and the operation, if properly performed, is free from danger and in case of non-success leaves the patient in no worse condition than before.

3. In this, as in all brain surgery, the great danger and cause of failure and high mortality is brought about by two agents, shock and sepsis. Shock will be avoided by rapid work, and by care not to jar the brain by rough use of instruments.

Without going into the matter more deeply let me say that I know of no better cushion during the use of the mallet and chisel than the hands of an assistant. No mechanical means can replace them. The choice of instruments is largely a personal matter. Germans use the chisel, Americans the electric motor, etc. Whatever be the choice, gentlemen, *consistent rapidity* and *ultra-rigid asepsis* must be practised.

75 WEST 55TH STREET.

POST-OPERATIVE RETENTION OF URINE.

In case of retention of urine we resort to the catheter only as a last resort. Patients are allowed to sit up or to stand up to urinate unless there is some strong contraindication. Otherwise a half drachm of sweet spirits of niter given every half hour will generally evoke spontaneous urination.—
JOHN C. MUNRO in *The St. Paul Medical Journal*.



THE HOME OF EPHRAIM McDOWELL IN DANVILLE, KY.

The * shows the room (according to tradition) in which, in 1809, he performed the first ovariectomy—the first real laparotomy. [Photograph made recently by Wm. Wade and furnished through the courtesy of Dr. W. H. Cooper, Oakmont, Pa.]

The medallion, of which the obverse and reverse are here reproduced, was designed by Dr. Robert L. Dickinson, Brooklyn, for the banquet held in New York by the American Gynecological Society on April 22, 1909. At that banquet—the Centennial Celebration of the Foundation of Abdominal Surgery—appropriate addresses were delivered, and the following poem was read by DR. SAMUEL M. BRICKNER, of New York.

EPHRAIM McDOWELL IN 1809

I.

This was the golden year of all the years
When from the generous womb of Time, there sprung
That one, who midst the nation's tears and cheers,
The weary shackles from the negro flung.
Within the selfsame hour that gave him birth
Upon the selfsame soil there was begun
An era soon to quicken all the earth:
A newer freedom for mankind was won.

II.

Oh, happy Time! Oh, happy Blue Grass Land!
That twice within one year thou shouldst unfold
Two mortals of the blest Elysian band
For lesser mortals reverent to behold:
The one—foredoomed—in war to forge the claim
That liberty of man is no mere phrase;
The other, too, of now undying name,
By golden courage, a new path to blaze.

III.

This, then, this was the year of all the years
When, with conviction born of fear and hope,
McDOWELL dried the fount of woman's tears,
And widened stricken woman's horoscope.
Who knows the agonies of heart and soul,
Who knows the torturing ferment of his mind,
Until achievement left him at his goal,
Till, Jacob-like, his angel lay behind?

IV.

No listening forum to acclaim his speech,
No throngs of men to greet him wild with cheers;
No frantic effort his brave hand to reach,
No tumult, save the stupid mob's rank jeers.
And yet his was the eloquence divine,
In every hamlet still it vibrant rings
Where Hope is born of woman's fear malign,—
To multitudes its sweet-voiced message brings.

* * * * *

And see, the dawn has broken through at last,
A century's darkness turns to radiant light,
Effulgent stands this master of the past,
Resplendent in the majesty of right.
For fairness, now and justice, have their hour;
To-day we hail him an immortal one:
We place him high as Surgery's fair flower—
America's, the world's, illustrious son.

V.

The while we marvel at his magic skill,
Conceived in boldness, aye, and born in need,
Our wonder grows and is the greater still
That outcome blest and safe should be his deed;
For no Listerian comforts hedged him 'round,
No marble walls or glass-encircled domes:
His amphitheater was the forest ground,
His trained assistants were some woodland gnomes.

VI.

The Victory Titanic, his to know,
The flower and the fruit thereof are ours:
For thus, by gift on gift, does our Art grow,
The splendid gifts of great men's splendid powers.
For since the Hippocratic days, the right—
Though not at once perceived by all the crowd—
Has always made fair Medicina's might;
By truth has thus our Art been best endowed.

VII.

The soldier on his breast his bravery wears,
The statesman is the idol of the hour,
The poet, e'en, his laurel proudly bears,—
The people love their honors wide to shower.
But he, this hero whom we celebrate,
What crown is his beyond an honored name?
His first reward was but an ardent hate,
Instead of praise, suspicion, fear and blame.

VIII.

He sought no favor from the hostile mob,
He sought no solace from the angry crowd;
His inspiration was a woman's sob,
From life's gray sky, he brushed away a cloud.
Clean, straight and fearless, like a knight he stood,
Like Lincoln, he but strove to see the right:
Let us acclaim this giant of the wood,
Who struggling through the darkness, found the light!

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, JUNE, 1909.

THE TALMA OPERATION FOR CIRRHOSIS OF THE LIVER.

A recent review of the subject by Bircher (*Medizinsche Klinik*, March 28, 1909) drives home the fact that the last word has not been said about this operation. It is therefore incumbent on internist and surgeon alike to be well acquainted with the principles of an operation that has been widely practised on the continent for fifteen years.

The operation, first performed by Talma in 1889 (and called also the Talma-Drummond-Morison operation) intends to create a permanent channel to lead away ascitic fluid from the abdominal cavity. Nature sometimes attempts this, and anastomoses between the branches of the portal veins and those of the superior vena cava have been found by Recklinghausen, Westenhoefer, and others. Invariably, however, these attempts are unsuccessful. By relieving ascites, the Talma operation intends at the same time to relieve the gastro-intestinal hemorrhages that not seldom result in death, and frequently cause weakness and discomfort. The results of the Talma operation (with its numerous modifications) may be seen by combining the statistics of six of the largest reported series of cases. These make a total of 1,565 cases, of which 30.4 per cent. were cured; 19.8 per cent. relieved; 39.2 per cent. unrelieved; and 10.6 died. In the various reports there is a general agreement in the per-

centage of cures. The greatest variation—5 per cent. to 23 per cent.—is in the percentage of deaths, and this is found to depend on the variation in the length of the post-operative period in which the different mortality statistics were based.

Employed as it has been in stenosis of the main trunk of the portal vein, in cardiac cirrhosis, in Banti's disease (where it has been combined with splenectomy), in pericarditic pseudocirrhosis of the liver, the operation finds its chief indication in the atrophic and hypertrophic cirrhotoses with ascites or with gastrointestinal hemorrhages, or with both of these symptoms. It is still a moot question whether obstruction to the portal vein leads to ascites. The poor results from operations recorded in many cases have been considered by some writers to indicate that the ascitic fluid is an exudate due to peritonitis, either simple or tuberculous. But unquestionably many of the cases present a transudate. Lieblein differentiates between the latter and exudate by determining the specific gravity and the albumin content of the ascitic fluid, and he makes his indications for operation accordingly. It would be of value to combine with these examinations a study of the morphology of the contained cells and of the bacteriology of the fluid. Whatever the theoretical considerations, the fact is that two grave symptoms—ascites and gastrointestinal hemorrhage—are, in 50 per cent. of the cases operated upon, either cured or relieved. The disease of the liver is, of course, unaffected, but the operation may afford a prolonged period of well-being and relief to patients who are suffering from serious symptoms.

The operative mortality will always remain high because the majority of the patients subjected to the operation are in a debilitated condition, with advanced visceral disease. Talma gives as contra-indications to operation a high grade disturbance of liver function (as shown by urobilinuria and alcoholic stools), icterus, xanthoma, and pruritus; but many other writers do not agree with him. Certain it is that the earlier in the stage of ascites the operation is undertaken, the greater are the chances for a permanent good result. Talma operates after two abdominal paracenteses have been ineffectual. Most of the surgeons exclude syphilitic cases from operation, but Ladenberger, who has collected the largest series, does not concern himself with the etiology as an operative indication.

It is undesirable to exclude from the liver too large a quantity of blood. In some of the cases operated upon this seems to have happened for such symptoms of poisoning as delirium, convulsions, and coma have ensued. Talma avoids these

manifestations by feeding the patient, post-operatively, on an albumin-free diet.

Talma's technic is simple. He fastens a tongue of omentum to the parietal peritoneum. The operation can readily be performed under local anesthesia. Some operators scrape the parietal peritoneum to obtain broad adhesions. Others, in addition to the omentofixation, ventrofixate the gall-bladder or spleen as well. Narath draws a strip of omentum 10-15 cm. long through a small peritoneal opening and makes a subcutaneous pocket into which the omentum is tucked. The advantages he claims are: 1. that the omentum is brought into the neighborhood of numerous veins, and 2, that blood is more readily expressed from the abdominal cavity. However, the mortality from this procedure has been high, and there is danger of hernia and of rupture of the wound. Numerous other modifications have been devised, but the simple Talma operation at present offers the best chances for success, inasmuch as it has given good results in a disease whose operative mortality, by any method, is high.—H. N.

THE WILLIAM T. BULL MEMORIAL.

The committee of representative lay and medical men that has undertaken to collect a substantial sum for the creation of a memorial to the late Dr. William T. Bull has wisely decided upon a department of surgical research as the most suitable and useful monument to his memory.

"Having in mind his noble character and his great talent and the untiring energy which enabled him to distribute the benefits of his knowledge and skill among so many—and in the majority of instances with little or no remuneration—it seems fitting for his associates, his students and those who owe their health or life to his mind and hands, to unite in erecting a memorial which shall typify his life and be an active and undying agency, not only for the perpetuation of his name, but for the furtherance of that art and science to which his life was devoted. . . . The most active and progressive men in the medical profession, and among them Dr. Bull, have long felt the need of some organization similar to that existing abroad, particularly in Germany, for correlating the clinical branches of medicine with the organized laboratories"

It is therefore purposed to establish a department where, in close relationship with clinical work, surgical problems will be pursued from all standpoints of pathology, bacteriology, chemistry, physi-

ology and anatomy. Little or no money will be expended for the erection of buildings. Practically all the income of the foundation will be applied (for salaries to those carrying out the work for publications, etc.), to studies in the New York College of Physicians and Surgeons—to which institution Dr. Bull devoted his best years, and in such hospitals of New York City as afford proper facilities.

While geographically the activities of the foundation will thus be limited, it will, no doubt, afford opportunities to investigators from various places, and its ultimate benefits will be universal. This journal is therefore doing what it can to help a doubly commendable purpose—a lasting memorial to a great American surgeon, and an institution for American surgical research! And it urges its readers also, and their public-spirited friends, to contribute to the fund now being collected. The committee hopes that many will aid—those who can give but little, as well as those who can give much. (No subscription list will be published.) Contributions may be sent to the treasurer of the fund, Mr. George C. Clark, Lincoln Trust Company, New York, or to the secretary of the committee, Dr. John B. Walker, 33 East 33rd Street, New York.

Surgical Suggestions.

In surgical shock strychnine and alcohol aggravate the condition.

Syphilis simulates nearly every other surgical disease, and the most virtuous are subject to its ravages.

The presence of diabetes should not deter the surgeon from giving a patient with that malady the benefit of relief from a surgical disease.

In operating for intestinal obstruction in the colon the first thought should be to save the life of the patient. This can often best be done by making an artificial anus. Too many patients are sacrificed to the surgeon's zeal to do a complete and mechanically perfect operation at once.

Gangrene of the extremities may be due to senile changes; local infection; mechanical injury to bloodvessels; tumors; diabetes; constitutional infective febrile disease; poisoning with ergot, lead, phenol, arsenic or tobacco; syphilis; trophic cord lesion; Bright's disease; leprosy; embolism; frost; ainhum; or Raynaud's disease.

Book Reviews.

Appendicitis and Other Diseases of the Vermiform

Appendix. By HOWARD A. KELLY, M.D. Large octavo; 502 pages; 215 original illustrations (some colored) and 3 plates. Philadelphia and London: J. B. LIPPINCOTT COMPANY, 1909. Price, \$6.00.

The encyclopedic work by Kelly and Hurdon on *The Vermiform Appendix and Its Diseases* has become so familiar in the four years it has been before the profession that a detailed description is unnecessary of this abridged edition of that work. Kelly "endeavored in preparing the first edition . . . to make that work a great storehouse of well-digested facts. . . . It soon, however, became evident that a compact *résumé* dwelling with especial care on the practical side of the subject would better meet the daily needs of the great army of general surgeons throughout the country."

To call this large book a "compact *résumé*" on appendicitis, except in comparison with its still larger predecessor, would convey a misleading notion of its character. Like the first edition it is a mine of information on the clinical aspects and on the surgery of appendicitis; and it contains the same numerous and beautiful illustrations by Brödel, Horn, Becker and Ruth Huntington—which by themselves almost constitute an illuminating work on the anatomy, pathology and operative treatment of appendicitis and its complications! Although this edition is not, like the first, exhaustive, it is extensive, and fairly "comprehensive."

Aside from elisions the text has not been much altered. The clinical section has been revised, however, by Dr. Walter Burrig, who has also added a few paragraphs on *Senile Appendicitis*.

In his description of the methods of removing the appendix we are somewhat surprised that, at this date, Kelly emphatically states that "it is important to avoid . . . the simple ligation and amputation, leaving the mucous membrane exposed, whether sterilized or not." And this in the face of the fact, which Kelly does not state (he enters into no argument in the matter) that the safety of this procedure has been demonstrated, microscopically, by Seelig and, clinically, by abundant experience. While, "simple" (properly, "crushing") ligation of the stump and cauterization of the mucosa is not practiced by more than a small percentage of surgeons it has been for ten years or more, as an example, the routine procedure with all the surgeons attached to one of the largest hospitals of New York City—an institution in which appendicitis is the most common surgical malady—and not once has it been shown there that this method is productive of adhesions, fistula or other complication. Moreover, the method does not "leave the mucous membrane exposed," properly speaking; it is destroyed by the ligature and the cauterant.

We find brief reference to Morris' point of tenderness (over the right lumbar ganglia), but we have failed to find mention of pain in the appendix region upon upward pressure over the descending colon, described as a diagnostic sign by an American surgeon and by Rovsing. Meltzer's name is not mentioned in the description of his sign, which Kelly credits to McMonagle, as a personal communication. Concerning localized skin sensitiveness as a diagnostic aid we find only "Cutaneous hyperesthesia is regarded by Blos as a symptom of great importance"; and the succeeding sentence: "Where cutaneous hyperesthesia, muscular rigidity, and localized or general pain are present, peritonitis will always be found"—which cannot be accepted as a clinical dictum.

We have selected these points for criticism merely to indicate that the book deserved a more painstaking revision. Essentially, however, it is a complete, luminous guide on the clinical and operative aspects of diseases of the appendix.

The publishers and the proof-reader deserve to share praise with the author and the artists. The book is quite as handsome as the earlier issue, which was universally commended. We cannot understand, however, why the

method of emphasizing words by spacing the letters, generally employed in German books, has again been given preference to italics or other distinctive type. "Surely, it is ugly and if not confusing, it at least fails to make the words sufficiently prominent!"

The Popes and Science. The History of the Papal Relations to Science During the Middle Ages and Down to Our Own Time. By JAMES J. WALSH, M.D., Ph.D., LL.D., Professor of the History of Medicine and of Nervous Diseases at Fordham University School of Medicine; Professor of Physiological Psychology at the St. Francis Xavier's and Cathedral Colleges, New York, and Lecturer on Biology at the Catholic Summer School of America. Octavo; 430 pages. New York: FORDHAM UNIVERSITY PRESS, 1908. Price, \$2.00 net.

It has been the generally accepted opinion that the Roman Catholic Church from the fourteenth century on, has been opposed to scientific investigation, particularly along medical lines. The reason for so erroneous an idea appears to have been fostered by frequent reference to the famous Galileo case which has been held up for centuries as an accusation against the Church by those who have not studied the facts thoroughly. Professor Huxley remarked in 1885 that from careful investigation of the Galileo incident he was led to believe "that the Pope and the College of Cardinals had rather the best of it," and Cardinal Newman, without trying to defend the Church, remarked that "this very case sufficed to prove that the Church did not set herself against scientific progress, but was the one exception which proved the rule." Moreover, the opinion generally held in regard to papal leniency and encouragement of science has been engendered by the writings of such men as Dr. Andrew D. White, who attempts to explain the Catholic attitude on premises not substantiated by the real facts.

Professor Walsh's book will stand as a correction for all time of the prevalent idea as to any former narrow-mindedness on the part of the Catholic Church in its attitude towards medical or any other science. His statements are irrefutable, for they are facts gained at a great expense of labor and patience, standing as truths which cannot be turned aside by any ultra-mundane observations of pseudo-scientists. The book is essentially a revolutionary one in the history of science and is a serious contribution to scientific literature. It will be appreciated not only by physicians who desire a truthful presentation of medical history, but also by countless educated Catholics who, up to this time, have been of the same opinion as their brothers outside the Church—that Catholicism and science were widely opposed.

All the fourteen chapters which make up the book are written in an entertaining style. In the introduction Dr. Walsh shows that the universities, which were the outgrowth of the Cathedral Schools, where teachers belonged mainly to the clerical order, contained the names of many scientific men on their roster, among whom may be mentioned William of Salicet and his pupil, Lanfranc, professors in medicine and surgery in the Italian universities and in Paris during the thirteenth century.

In the chapter entitled, *The Supposed Papal Prohibition of Dissection*, the writer says "There is a very general impression that the Roman Catholic Church was, during the middle ages, opposed to the practice of dissection, and that various ecclesiastical regulations and even papal decrees were issued which prohibited, or at least limited to a very great degree, this necessary adjunct to medical teaching. . . . The persuasion as to the minatory attitude of the Church in regard to dissection is very widespread among even supposedly well-educated men. . . . This false impression has been produced by writers in the history of science who have emphasized very strongly the supposed opposition of the Church to science. . . . That statements of this kind should have been made by men of distinction in educational circles and should have passed current so long, is only an additional evidence of an intolerant spirit in those who least suspect it themselves and are most ready to deprecate intolerance in others." Dissection was extensively practiced by Mon-

dino, whose book on anatomy was universally used in the fourteenth century, and other anatomists were given the consent of the Church to carry on their work with certain restrictions which in no way hindered science, but merely protected society from overzeal and exaggerated enthusiasm.

The Practical Medicine Series, Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Volume II. General Surgery. Edited by JOHN B. MURPHY, A.M., M.D., LL.D., Professor of Surgery in the Northwestern University, etc., etc. Duodecimo; illustrated. Chicago: THE YEAR BOOK PUBLISHERS, 1909.

This volume is a comprehensive survey of the year's progress in the various branches of surgery. The editor's experience gives him unusual ability to select the wheat from the chaff in the vast material he has to thresh out. What is especially admirable is the prominence he gives to that class of surgical work which is, as yet, in its experimental stage. However, it is surprising that in some parts of the book so much space should be devoted to untenable hypotheses and so little space to actual work done. For example, in the section relating to the etiology of carcinoma, a page is given to one hypothesis that syphilis is the causative factor and to another making the tubercle bacillus the etiological factor; and no mention is made of Ehrlich's magnificent work on cancer transplantation. By far the larger portion of the volume is devoted to abstracts from the literature, here and there the opinions and experiences of the editor are parenthetically presented.

The subject-matter is divided into: Anesthesia, Radiography, New Instruments, Operative Technic, Wound Healing, Tetanus, Anthrax, Tumors, Bloodvessels, Bones, Head and Neck, Thorax, Abdomen, Hernia, Kidney and Bladder, Extremities. From the wealth of material an attempt will be made to select some data of special interest. Spinal anesthesia is being employed very extensively on the Continent. But the dangers in the employment of spinal anesthesia are still great, and ether is at present the best and safest anesthetic. For the treatment of certain wounds and abscesses trypsin has been advocated by Muller, Jochman, and Baetznier; some excellent results have been obtained, but the work is as yet in its infancy. De Keating-Hart's fulguration for carcinoma is being tried by many surgeons, but reports as to its efficiency vary, and the results are still doubtful. Considerable space is devoted to Crile's work on hemolysis in carcinoma; no mention is made that a number of other observers were unable to obtain his high percentages of positive results. The cancer problem is entered into in considerable detail, especially the questions of infectivity and contagiousness, of geographical distribution, and of trypsin treatment. Matas' operation for aneurism continues to give excellent results. It is interesting to note that of 52 operators who have tried his method, 49 are American. Braun reports a remarkable case of a neuroma of the sympathetic, in which he resected a portion of the abdominal aorta involved in the growth, and performed a circular suture of the divided aorta; the result was perfect. Lexer's astounding work on the transplantation of whole joints and bones has recently appeared and, if his results are verified by others, it will open an enormous field for plastic bone surgery.

Wood's ingenious skull drill for making osteoplastic flaps is described; also the technic and diagnostic value of brain puncture. Payr's treatment of hydrocephalus is as yet in its experimental stage. The editor does not take up the subject of brain tumors, in the treatment of which no great advance in the past year has been made; it should be mentioned, however, that several excellent results have been reported in tumors of the ponto-cerebellar space. This field at present offers the best possibilities for surgical treatment of brain tumors. The results of alcohol injections for trifacial neuralgia have been good; on the contrary, the end-results of the Gasserian ganglion operation have not been brilliant. Operation on the thyroid, especially by Kocher and by the Mayos, have given excellent results, cases of Graves' disease not excepted. No new developments in the treatment of breast tumors have been reported. Rapid strides in thoracic surgery have been made

in the past year. The Brauer and Sauerbruch cabinets are being thoroughly tested. Elsberg has shown, experimentally, and on human beings, the value of the prone posture whenever the pleura has to be opened. The question of sition, and continuous enteroclysis. Bovée reports what the etiology of pulmonary embolism has not been cleared up; but the bold attacks made directly on the pulmonary artery by Trendelenburg open up a new field for surgery in a class of cases heretofore invariably fatal. Several successful cases of suture of wounds of the heart have been reported.

Murphy has thoroughly covered the modern views on perforative peritonitis, and reports brilliant results with rapid operation, drainage and no irrigation, Fowler's position, and continuous enteroclysis. Bovée reports what appears to be the first case of suppurative gastritis successfully treated (by incision and drainage). Various reports show that the operative mortality in carcinoma of the stomach is lessening. The Murphy button is still being used very extensively in gastrointestinal surgery (although mention should be made of the statements of many of the surgeons of the greatest experience in this field that they almost invariably rely on suture methods). Much has been written about appendicitis, but of this there is little that is new. New technical points have been presented in the surgery of prolapse and carcinoma of the rectum. It is interesting to note that Judd, in reporting a large series of cases of hernia from the Mayo clinic, finds that the old Bassini operation gives very satisfactory results in most of the cases. Radical extirpation of bladder tumors has been practiced by several operators in the past year, but the end results cannot at present be stated; at the operation C. H. Mayo advises wide opening of the peritoneal cavity.

Despite a number of studies, the pathology and treatments of "stiff and painful" shoulders is as obscure as ever. In fractures about joints, briefer periods of immobilization and open operations are being more widely applied; radiography is indispensable throughout the treatment.

Manual of Operative Surgery. By H. J. WARING, M.S., M.B., B.Sc. (Lond.), F.R.C.S.; Senior Assistant Surgeon, St. Bartholomew's Hospital. *Third Edition.* Duodecimo; 750 pages; 521 illustrations, several of which are in color. London: OXFORD UNIVERSITY PRESS, 1909.

In order to confine this volume within reasonable dimensions, the author has limited himself to the description of only the more important and well recognized operations. Each description is prefixed by a short account of the indications for operations. The descriptions are clearly written, important details are well brought out and on the whole, the views expressed are sound.

The main objection we offer against the book is a decided lack of up-to-dateness. This is particularly evident in the inclusion of operations that are no longer in general use, and the omission of more modern operative methods. As instances of the former, we may mention, among others the Roux Hople method for femoral hernia, the Kocher method for amputation of the tongue, and the Heinecke-Mikulicz pyloroplasty. It is surprising to note that the author still advises the blind incision of Gimbernat's ligament to relieve strangulation in femoral hernia, and irrigation of the peritoneum in septic cases with 1-4,000 biniodide of mercury or 2 per cent. carbolic acid solution. The latter recommendations, we believe, are now regarded as positively dangerous. The description of the operative treatment of appendicitis is that practiced in this country ten years ago. On the other hand, such universally accepted operations as Koder's gastrotomy, the inversion of the tunica vaginalis for hydrocele, Finney's pyloroplasty, Brophy's operation for cleft palate or any of the forms of osteoplastic operations are not mentioned. To our view the greatest evidence of lack of modernity in this book is the repeated mention of such terms as "using antiseptic precautions," "dressed with aseptic gauze," etc. The repeated use of these phrases has no longer any place in a modern book, even in an undergraduate's manual.

Despite these criticisms, the book possesses many solid merits and can be safely recommended to students.

Progress in Surgery.

A Résumé of Recent Literature.

A Modified Fistula for Permanent Suprapubic Drainage. W. G. ECKSTEIN, New York. *The Post-Graduate*, May, 1909.

Eckstein has previously published (*The Post-Graduate*, September, 1908) a method for the relief of hopeless cases of urinary incontinence, consisting in closing the urethra by suture and draining suprapubically by a permanent fistula. In this later communication Eckstein describes a method of making a non-leaking permanent suprapubic fistula. It is in some respects a modification of the idea of Hunter McGuire. It has given perfect satisfaction in the one case in which the author employed it, so that after a lapse of eight months the patient is vastly improved and declares himself to be perfectly comfortable.

The bladder is opened through a median incision. Whether or not an intravesical suture is made, the fistula is constructed as follows: A 24 to 28 French catheter is placed within the bladder at the lowest end of the vesical incision, and the bladder is closed by the usual suture, remaining open only at the situation of the catheter; the muscle and fascia are then closed by suture in a similar way, thus leaving an opening through the muscle, fascia, and bladder wall at the lowermost end of the incision. The catheter is then bent upwards in the median line and wrapped about closely with gauze saturated with balsam of Peru (to promote granulation). The skin is sewn in the reverse way, beginning at the lowermost angle of the wound so as to allow the catheter to escape at the uppermost angle of the wound. This is allowed to remain *in situ* for several days, when it can be removed and replaced by another. After seven to ten days the catheter may be removed altogether, as there is then established a compressible canal, two to three inches long, running upwards from the water level and large enough to provide sufficient drainage. A pad is worn on a belt so as to make light compression on this canal, which is thereby rendered absolutely water-tight. It is unnecessary and injurious to exert much pressure on this canal. The patient is provided with two or three Nelaton catheters which he carries around with him in a suitable bottle filled with some antiseptic. He can without difficulty insert the catheter through his fistula (owing to its situation and direction) and allow the urine to siphon out. It is also a simple matter for him to daily lave the bladder with some mild lotion.

Movable Kidney, with Details of an Operation for Fixing the Kidney. W. WATSON CHEYNE. *The Lancet*, April 24, 1909.

Movable kidney is discussed from the standpoints of symptomatology, indications for operation and the causes of failure of operations.

A new fixation operation is then described: The patient lies on the back with a small pillow under the loin, projecting it slightly forward; it is not necessary to push the lumbar region very far forward. An incision is then made along the edge of the ribs and an inch below them, beginning about the edge of the latissimus dorsi, or practically just where, looking down on the patient, the anterior surface of the abdomen ends, and from this point it is carried forward parallel to the edge of the ribs for from three to four inches. It is well to make the incision short in the first instance; it can be subsequently lengthened if necessary. The skin and fascia are divided and also the external oblique muscle; the internal oblique and transversalis muscles can be partly separated and partly divided. They only require a little division here and there, and any nerves that are crossing can be pulled out of the way. One then comes down on the transversalis fascia. The fascia is not divided but is pushed towards the middle line, the peritoneum, fascia, and kidney being thus carried forward together. In this way there is less risk of tearing the peritoneum, and we also get at once to the posterior

surface of the kidney, which can be easily felt. The edges of the wound being well retracted and the fascia and peritoneum being held well towards the middle line, and the kidney being fixed by the assistant's hand placed in front of the abdomen, the outline of the kidney can be readily palpated. A hole is now made in the perirenal fascia over the posterior part of the kidney, and the renal fat will at once protrude. This hole can now be enlarged vertically over the posterior surface of the kidney, and the fat being pushed outwards or removed the posterior surface of the kidney is exposed. The renal fat is then partly removed and partly pulled forwards with the perirenal fascia and the kidney is gradually shelled out and can be readily brought out of the wound. The posterior part of the wound is then thoroughly cleared from fat till the diaphragm, the psoas, and the quadratus lumborum muscles are fully exposed. The fatty capsule and the posterior part of the renal capsule are thoroughly turned aside (it is well to take away a good deal of the fat in case it should get in between the kidney and the muscles and prevent firm adhesion). The kidney is then turned forwards and incisions are made through the capsule on the posterior surface, as follows: A vertical incision running upwards near the inner side of the posterior surface and curving outwards at the upper part towards the upper and inner part of the posterior surface, and then a transverse incision running across the kidney at the lower end of this vertical incision. The capsule can be stripped off as far as the convex border of the kidney. From each end of the lower transverse incision a small vertical incision is made through the capsule, and then this portion can be pulled down so as to hang downwards from the lower pole of the kidney. The fatty capsule and loose fascia being prevented from getting in between the kidney and the posterior muscles, the kidney can now be turned back and placed exactly in the position which is desired; it can be put up as far as one wishes, and also at the proper distance from the spine. By means of strong catgut or silk stitches the vertical piece of capsule is now stitched down to the muscles behind, taking care not to stitch it too tightly, because the natural tendency of the kidney is for the outer border not to be so closely in contact with the posterior wall of the abdomen as the inner border is. The piece of capsule which is hanging down from the lower pole is then stitched to the muscles below the kidney, and in this way the raw surface of the kidney is kept in contact with the surface of the muscles behind and acquires firm adhesion to them. The capsule at the lower part is strengthened by stitching down the detached portion of the renal capsule so as to form a sort of ledge on which the kidney rests. The kidney having been fixed, the peritoneum is then allowed to fall back into position and a few stitches will generally bring the deeper muscles together, while the external oblique is closely united by two or three mattress sutures and subsequently by a continuous catgut suture.

Apart from the ease with which one can fix the kidney in its proper position by this operation, there is another great advantage in this incision. Everyone is familiar in cases of movable kidney with the difficulty of being certain that all the symptoms are entirely due to that mobility. With the ordinary lumbar incision one cannot as a rule make any investigation of the condition of these other parts, but with the incision described it is quite easy to do so. By making an incision into the peritoneal cavity after having exposed the kidney, one can ascertain the condition of the various parts. And not only can these conditions be diagnosed, but some of them can also be remedied without making a further incision. For example, it is, of course, quite easy to stitch the liver up to the edge of the ribs so as to obtain adhesion between that organ and the diaphragm. And also, the colon can be fixed up to the under surface of the liver at the same time. And then the various conditions in connection with the gall-bladder are quite accessible by extending the incision.

Personal Observations Upon Ureteral Calculi. ALEXIS V. MOSCHOWITZ, New York. *Medical Record*, May 1, 1909.

Ureteral calculus is a disease added to the domain of surgery, practically only since the discovery of the X-rays.

The number of reported operations for this lesion previous to this period are probably not more than half a dozen. The manifestations of ureteral calculi were included under those of renal calculus; and since the use of the X-rays, a large majority of clinically diagnosed renal calculi are really of ureteral situation.

In text-books the ureter is described as being narrowed at three points: (1) at or about the junction of the ureter and the pelvis of the kidney; (2) at the vesical end, and (3) at the point where the ureter crosses the common iliac artery. These points are of importance because they are the sites of predilection for the impaction of calculi. In addition to these three points Moschcowitz has observed a fourth point, hitherto not sufficiently appreciated. In sixteen out of eighteen of his cases he found a calculus impacted at a point between the vesical end of the ureter and the point where it crosses the common iliac artery, perhaps a trifle nearer to the former. Moschcowitz found this point of constriction of the ureter not to be due to any internal narrowing, but to a dense, sharp, fascial band (sometimes containing a small bloodvessel) which passes inward from the lateral pelvic wall to the median line. It is necessary to divide this band of fascia, in order to mobilize the lowermost segment of the ureter. The constant presence of this band leads the author to the belief that the impaction of calculi in this portion of the ureter is not wholly due to the slight change in direction which the ureter takes in this part of its course. As it occurs in the male and female sex as well, the broad ligament and uterine artery cannot be looked upon as factors in its production.

If the calculus is quiescent, the only symptoms and signs are a constant and fixed pain, with a point of tenderness, either in the back, in the costovertebral angle, or the front of the lateral abdominal wall, and the presence of blood in the urine in microscopic quantities. In the latter stages we have added to these symptoms those of infection. The presence of microscopic blood in the urine is a *very important* symptom of either renal or ureteral *quiescent* calculus. If the calculus is migrating, there arise all the classical symptoms of renal colic, and a greatly augmented hematuria.

It is not commonly appreciated that a calculus situated very near the vesical end of the ureter may give rise to symptoms referable to the bladder. Even long before the calculus has become extruded the patient begins to complain of symptoms of vesical irritation. It is a peculiar physiological phenomenon that when a ureter is the seat of a calculus, the tenderness is not limited to the site of the calculus, but to the entire extent of the ureter.

Moschcowitz refers to the diagnostic possibilities of cystoscopy and of ureter catheterization.

Skiagraphy, properly conducted, is the most important diagnostic measure. Pitfalls which may arise in the interpretation of a given shadow, which may be found upon the plate in the course of the ureter, such as phleboliths, calcified glands, sesamoid bones, and foreign bodies in the intestinal tract; but given a clear history of a urinary calculus and the presence of a shadow in the course of the ureter, the evidence is overwhelmingly in favor of calculus. If doubt exists whether a given shadow proceeds from the ureter or not, additional evidence may be obtained by passing a styleted ureter catheter to the point of obstruction and again subjecting the patient to the X-rays.

No calculus should be permitted to stay indefinitely in the ureter; the eventual outcome must be an infection of the kidney with its inherent dangers.

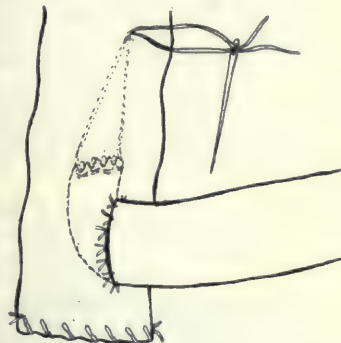
Anuria is an indication for prompt surgical attack. Moschcowitz is convinced that the so-called reflex anuria due to a calculus in one kidney is an exceedingly rare phenomenon, and that the vast majority of cases of complete anuria due to ureteral causes, are due to either bilateral obstruction or to obstruction in one functioning kidney, from either acquired or congenital causes.

Cases of ureteral calculus are reported, illustrating the various symptoms, complications and indications for treatment. The different modes of attack, dependent upon the site of the calculus, are described, especially the technic employed by the author in the extraperitoneal removal of

calculi from the pelvic portion of the ureter. The surgical removal of impacted ureteral calculi is followed by almost ideal results. The mortality in experienced hands is practically nil; the operation is comparatively easy of execution; the period of convalescence is rapid; the patient is immediately relieved of all distressing symptoms, and if the function of the kidneys has not been seriously interfered with by the disease, full return to health will be very probable; finally the danger of a subsequent hernia is so slight, that it does not even merit serious consideration.

Intestinal Anastomosis by Invagination. A. ERNEST MAYLARD, Glasgow. *Annals of Surgery*, May, 1909.

This is presented as a very rapid method of anastomosis. Suppose the case to be one of excision of the cecum. After the resection, the open end of the ascending colon is stitched up. A longitudinal incision is then made in the colon sufficiently long to accommodate the insertion of the divided ileum. Across the patent orifice of the latter a silk suture is passed, like a drawstring; its ends are left long and the free end is passed through the eye of the needle (which thus holds both ends of the suture). The needle is passed through the opening in the colon and up into the lumen of the bowel about two inches, when it is made to emerge. By pulling on the needle, and by a little manipulation, the open end of the ileum is made to pass along the inside of the colon a short distance. While



the "sling" is kept tense the ileum is fixed to the colon by interrupted Lembert sutures around the circumference of the opening of the colon. Unthreading the needle, the sling suture is withdrawn and the orifice of the ileum thus allowed to open out. A ligature is passed around the puncture in the colon, and the anastomosis is thus completed. When invaginating colon into colon an inch or so of the mesocolon (being bulkier than mesentery) must be tied off first.

In this operation, because of the mechanics of the anastomosis, only one row of sutures is necessary, Maylard says. Another advantage, he thinks, in addition to the saving of time, is the lessened danger of contraction at the site of the anastomosis. He is not prepared to deny that the invaginated portion may not be productive of trouble (intussusception), but he thinks the risk is slight. Probably the segment introduced assumes a valve action, thus replacing the ileo-cecal valve in cases of ileo-colostomy. Maylard has performed this operation four times, each with perfect union.

Experiments on the Action of Fibrolysin on Scar Tissue (*Experimentelle Untersuchungen über die Wirkung des Fibrolysin auf das Narbengewebe*). W. BRANDENBURG, Berlin. *Archiv für Klinische Chirurgie*, Vol. 89, No. 1.

From a rather extensive experimental study of the action of fibrolysin on rabbits in which scar tissue formation had been induced by the implantation of sterile plates of colloidin, the author concludes that this drug produces no permanent alteration in connective tissue. He suggests that the brilliant results obtained by some observers may be ascribed to the effect of other methods of treatment

used in combination with the fibrolysin, such as massage and hot air in Dupuytren's contracture, rather than to the action of the drug in question.

Fatty and Villous Proliferation in the Knee Joint
(*Ueber Fettgewebs- und Zottenwucherungen im Kniegelenk*). C. RAMMSTEDT. *Archiv für Klinische Chirurgie*, Vol. 89, No. 1.

The author describes a condition in which a simple or inflammatory hyperplasia of the ligamentum mucosum with the plicae alares, leads to a more or less chronic derangement of the knee joint, by virtue of the irritation and limitation of motion produced whenever the free ends of these folds or fatty ligaments become wedged or impacted between the tibial and femoral articular surfaces. In the normal knee the lig. mucosum is narrow and attenuated at its femoral end, but at its patellar extremity, it expands laterally to form wing-like fringes, or membranes—the alar ligaments—which are loaded with fat. A band-like portion attached to the intercondyloid fossa, keeps the fatty masses under proper tension and prevents incarceration of the villous fringes.

Clinically, the chief points of interest are the absence of striking physical signs (there being either none or but slight swelling of the joint capsule), the presence of a very moderate protrusion at either side of the patella, and a minute, or even visually immeasurable amount of limitation in the motion of extension. This last phenomena, when elicited, is of importance diagnostically and is to be explained by the interference of the prolapsed fatty masses. Forcible extension causes pain and the frequent incarceration of the tufts leads to synovitis and fluid exudation.

The condition must be differentiated from floating cartilage, laceration of a meniscus, or a crucial ligament. In these last three lesions, the clinical picture is usually dominated by the typical attacks of acute disorder, that are so well known.

The author performed open arthrotomy with resection of the enlarged villi in three cases with perfect functional restoration in all the patients.

The Veins in Thrombo-angiitis Obliterans with Particular Reference to Arterio-venous Anastomosis as a Cure for the Condition. LEO BUEGER, New York. *Journal of the American Medical Association*, April 24, 1909.

As *thrombo-angiitis obliterans* Buerger has described the condition formerly called *enderarteritis obliterans* and *spontan-gangren* by the Germans. Its management is more than ever becoming a problem for American physicians on account of the tremendous influx into this country of Polish and Russian Jews who, especially, suffer with this disease. He has within the past two years seen over fifty cases and been able to collect clinical data on forty-four of them and has made pathologic studies of twenty amputated limbs. The development of the symptoms is pretty much the same in all cases. Beginning with indefinite pains, numbness and twitchings in the limbs, after the lapse of weeks, months or years, trophic symptoms, ulcers, blebs, etc., make their appearance, there is exquisite pain, on account of which the physician is consulted. Though resembling erythromelalgia and Raynaud's disease in some respects, the clinical picture is so distinct that an attempt should be made to put it in a separate class. The pathologic condition is an obliterating thrombosis of the vessels, chiefly the arteries, followed by organization and healing and an attempt at the production of sufficient collateral circulation. Medical treatment is unavailing where the disease does not undergo spontaneous arrest, and other methods must be invoked. The operation of arterio-venous anastomosis has been done four times with but one successful result, owing, Buerger thinks, to the diseased condition of the vein in the cases attempted. He therefore gives at length his observations on the veins in nineteen limbs amputated for this disease and gives a schematic diagram of the circulation as it is after deflection of the arterial current from the femoral

artery into the femoral vein. That the thrombo-phlebitic process has obstructed the superficial vein can be determined with reasonable certainty, but the question of the obliteration of the deeper veins is a most puzzling one. Buerger sees some promise in observing the appearance of cyanosis in the dependant limb and its disappearance after the superficial veins are obliterated by a bandage only sufficiently tight to obstruct them, after the limb is elevated. He gives twelve groups of symptoms presented by the patients and points out those most adapted to the operation of anastomosis of the femoral artery with the femoral vein. This requires the presence of conditions for restoring the vascular current and we have to consider the following conditions: the absence of extensive local infection with ascending chronic, interstitial inflammatory process, the suffering of the patient, the uselessness of the limb, the history of the loss of the other limb, the absence of attacks of migrating phlebitis, evidence of arterial occlusion, and the presence of signs indicating that the limb cannot be saved by other means.

Circumscribed Serous Spinal Meningitis. W. G. SPILLER, Philadelphia. *American Journal of Medical Sciences*, January, 1909.

While cases of the above described malady are rather uncommon, the recognition of such cases is highly important for the reason that they are readily amenable to cure by an easy operation. The disease is characterized by the formation of a cyst in the spinal meninges, but nothing is known of the pathogenesis. The symptoms are those of tumor of the cord. The author, in connection with Drs. Musser and Martin, reported the first case in which operation was resorted to. The patient to-day, six and a half years ago, is entirely well. The author briefly summarizes all the reported cases.

The Antitryptic Content of the Blood Serum in Malignant Disease. MARY E. ROCHE, Baltimore. *Archives of Internal Medicine*, April 15, 1909.

In forty-five malignant cases there were 20 per cent. increased antitryptic reactions, while in twenty-two malignant cases, the percentage of increased tryptic reactions was 77 per cent. While these results show that the test is by no means specific, they indicate at all events that a negative reaction is of some significance.

A New Sterilizing Method for the Disinfection of Rubber Gloves and Silk-woven Catheters (*Ueber einen neuen Desinfektionsapparat für Gummihandschuhe und Seidenkatheter*). HEUSNER. *Zentralblatt für Gynäkologie*, April 24, 1909.

Rubber gloves and woven catheters are rapidly ruined by boiling in water. Even steam impairs these articles very rapidly. The apparatus consists of a sterilizer with double walls, between which are wire netting, to prevent overheating of the apparatus. The gloves or catheters are boiled for thirty minutes in pure glycerine, care being taken that they are kept entirely beneath the surface of the fluid. In this fluid sterilization may be repeated innumerable times without affecting the elasticity of the gloves or the smoothness of the catheters. The glycerine may be repeatedly used.

Ligation or Excision of Thrombosed Veins in the Treatment of Puerperal Pyemia. J. W. WILLIAMS, Baltimore. *American Journal of Obstetrics*, May, 1909.

Williams is greatly in favor of this new operation. As he puts it, the mortality of the disease unoperated is at least 66 per cent., and anything offering any hope of improvement is therefore to be hailed with joy.

He has operated upon five cases, all abortions except one, which was a premature birth at the seventh month. Only one patient died. [As in almost all of the cases it appeared sufficient to the operator to ligate only one vein, we must regard his cases as rather mild in type.] The transperitoneal method, and mere ligation (unless marked periphlebitis exists) is advised. A very lucid discussion

of our present knowledge and a list of all the cases reported concludes the paper.

Successful Treatment of Phlegmons of the Hand with Hot Air Baths (*Die Erfolge der Heissluftbehandlung bei akut eitrigen Entzündungen der Hand*). H. ISELIN, Basel. *Muenchener Medizinische Wochenschrift*, April 20, 1909.

Small incisions are made on the palmar and lateral surfaces to evacuate pus, without injuring tendons or nerves; cavities are irrigated with salt solution, and very lightly packed with iodoform gauze; on the very day of operation the hot air treatment is instituted, at first twice daily for two hours, latter only once each day. The dressings are renewed and the affected member placed in the dry hot air bath at a temperature of from 90 degrees to 110 degrees C. Care should be taken to keep the skin in good condition.

By means of this treatment the pain is much reduced and healing accelerated. The necrosis of tendon sheaths is almost entirely eliminated, occurring only once in a woman of 72 with streptococcus infection, in whom a single tendon was lost. The results have far surpassed those obtained by means of Bier's passive hyperemia and hospital supervision is not essential.

Ocular and Orbital Symptoms of Thrombosis of the Cavernous Sinus. EDWARD JACKSON. *Colorado Medicine*. April, 1909.

Thrombosis of the cavernous sinus arises without sepsis from general conditions of the blood, or of the blood pressure. Septic thrombosis occurs by extension from the other central sinuses, from disease of the middle ear, from the nasal accessory sinuses, the tonsils or jaws, as a sequel to furuncles of the lip, cheek, nose, or other parts of the face, or by lesions of the lids or contents of the orbit.

There is an intimate relationship between the cavernous sinus and the nerve trunks and vessels that supply the eyeball and other structures of the orbit.

Anteriorly it receives the ophthalmic vein, the outlet for the veins that unite about the apex of the orbit. Passing through its wall, and separated from its contents by the lining membrane, are the sympathetic fibres of the carotid plexus, the ophthalmic branch of the fifth nerve, the trunks of the oculo-motor and patheticus, and, a little to the outer side, the abducens nerve. The most important symptoms of cavernous sinus thrombosis are those of interference with the functions of these intimately related structures. They include the effects of venous obstruction at the apex of the orbit, paralysis more or less complete of the various ocular and orbital muscles, and pain throughout the distribution of the ophthalmic branch of the trigeminus.

Pain may be the first condition to call attention to involvement of the eye. Occasionally the patient supposes that a foreign body has lodged in the conjunctiva. Paralysis of the ocular muscles may appear early, and the consequences of venous stasis, such as exophthalmos, swelling of the tissues of the orbit and lids and chemosis, are the most constant and significant of the ocular and orbital symptoms. Several cases have been reported where the exophthalmos has disappeared by the development of a collateral circulation, without any establishment of the venous outlet through the sinus. In the great majority of cases both eyes are affected, the thrombosis extending from one cavernous sinus to the other through the circular sinuses. The tendency to involve both orbits is an important diagnostic point, making clear the distinction between orbital cellulitis, or thrombosis of the orbital veins and involvement of the cavernous sinus.

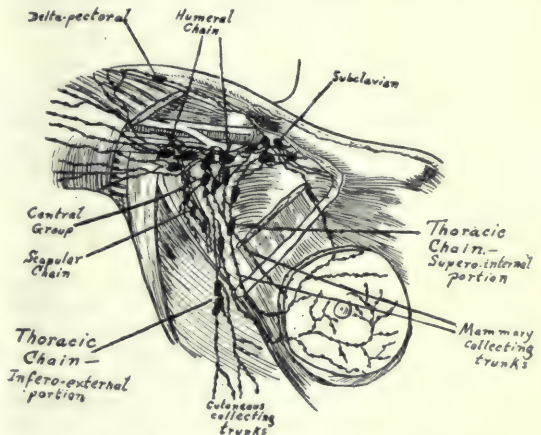
On Intraocular Disease Brought on by Disease of the Nasal Sinuses. H. GRADLE. *Ophthalmology*, April, 1909.

It has been proven that diseases of the nose and particularly of the nasal sinuses may lead to a variety of eye affections. The most common of these are those in which there is no acute ocular lesion but merely symptoms referred to the eye. Obscure pains in and

around the eye and obstinate asthenopia are in some cases due to suppuration of some one nasal sinus and cease after its successful treatment. Less common are lesions of the ocular adnexa of nasal origin. It is only in diseases of the lacrimal passages that a nasal origin is the etiology. In a manner less clearly understood but surely shown by clinical results, nasal suppuration, especially in the presence of adenoids, is often an important factor in the production and perpetuation of phlyctenular or scrofulous keratitis. The optic nerve may besides become affected by direct extension of disease from the posterior ethmoid cells or the sphenoid sinuses without orbital involvement. Quite a series of cases of optic neuritis either purely retrobulbar or extending visibly into the papilla have been traced to the posterior nasal sinuses. The author presents four cases of choroidal disease with more or less involvement of the retina which were associated with sinus disease on the same side.

Acute Pectoral (Thoracic, Anterior Axillary) Lymphadenitis from Cutaneous Infections of the Lower Lateral Chest and Upper Abdominal Wall. WALTER M. BRICKNER, New York. *Journal of the American Medical Association*, April 24, 1909.

Brickner quotes his Surgical Suggestion (*AMERICAN JOURNAL OF SURGERY*, April, 1906), calling attention to the occurrence of lymph gland enlargement just beyond the upper outer border of the breast near the edge of the pectoralis major, from skin infections about or above the waist line (*e.g.*, a furuncle from corset irritation). He has observed five cases, all in women. In four the exciting lesion was a furuncle, and suppuration slowly developed in the glands; in the other case infection of a superficial burn over the lower costal cartilages caused the lymphadenitis, which resolved without suppuration. Four of the



patients had previously consulted other physicians, who had regarded the thoracic swellings as neoplasms. In one case a hard swelling in the anterior axillary line of 3 weeks' development, was regarded as a cancer in two clinics. A receding furuncle was found in the waist line on the same side. Just before incising the swelling (for deep suppuration) two experienced colleagues pronounced it an "undoubted carcinoma."

The mistake is most apt to be made in women with large, firm mammae, in whom the proximity of the tumor suggests its involvement of outlying breast tissue. The lesion is probably more common in women than men because of corset pressure.

The axillary glands are divided into the following groups: (1) humeral, (2) thoracic, (3) scapular, (4) central or intermediate, (5) subclavian. The thoracic, pectoral or anterior group or chain consists of a supero-internal portion, overlying the second or third intercostal space beneath the pectoralis major, and an inferoexternal portion, over the fourth and fifth intercostal spaces, along the long thoracic artery. As will be seen in the cut (after Poirier) "the anterior cutaneous and the mammary lym-

phatics more particularly end in the superointernal group; the absorbent vessels of the lateral wall of the thorax in the inferoexternal group" (Leaf).

It is, then, the superointernal (portion of the thoracic) group which is usually early involved in breast carcinoma. The inferoexternal portion, on the other hand, is affected in cutaneous lesions of the lower lateral chest wall and of the upper abdomen; when inflamed, these glands form a mass over the fourth rib near the outer edge of the pectoralis major, sometimes partly beneath that muscle.

The text-books of surgery discuss acute lymphadenitis in general rather than in anatomical detail. They make no specific reference to the lesion under consideration.

Malignant Tumors of the Tonsils. GEORGE BACON WOOD. *The Pennsylvania Medical Journal*, March, 1909.

Two cases are reported. The first patient had been operated upon years before for enlarged glands of the neck supposed to be tuberculous. When the patient was admitted to the hospital, a diagnosis of malignant tumor was made. The external carotid artery (right) was ligated, the tonsil and a number of enlarged glands removed. Two other extensive operations were undertaken for further glandular involvement, but the patient died after numerous metastases had formed. Microscopical examination showed the tumor to be a spindle celled sarcoma.

In the second case there was a large, round, purplish-red mass projecting from the left faucial region. The carotid artery was ligated and as much of the primary tumor as possible was removed. Eventually the wound healed, but the patient died of metastases some months later. The examination of the tonsil removed showed it to be a very rapidly growing small round-celled sarcoma.

The author was able to find 137 cases of malignant tumor of the tonsil reported since 1884. Sixty-nine cases were sarcoma, sixty-four cases carcinoma and one case endothelioma. It is an interesting fact that sarcoma seems to occur at almost any age while carcinoma seldom appears before the fiftieth year. Carcinoma of the faucial region is much more apt to involve the surrounding structures than sarcoma. Sarcoma has a tendency to remain limited to the capsule of the tonsil and only when it breaks through does it involve the pillars of the fauces and other surrounding structures. A peculiar fact is that sarcoma in many cases is liable to form metastases in the lymph glands.

Tracheotomy. CHEVALIER JACKSON. *The Laryngoscope*, April, 1909.

The profession hesitates longer to advise tracheotomy than it did fifty years ago. The principal reason for this is probably the introduction of general anesthesia. The cough reflex is the watch-dog of the lung, and when the trachea is to be opened, should be preserved or stimulated, rather than drugged asleep. When tracheotomy is decided on, there is usually sufficient dyspnea to demand some voluntary use of the extraordinary muscles of respiration. As complete anesthesia approaches, this voluntary action ceases, cyanosis increases until the respiratory center is paralyzed from over-stimulation, and the patient makes no further breathing effort. The trachea under these circumstances should be opened quickly, preferably by a stab wound.

Wider employment of tracheotomy in the more favorable classes of cases than is now usual, besides reducing its mortality almost to nil, will give us a better conception of its usefulness. The wonderful general therapeutic effect of better oxygenation and the local improvement from putting the larynx at rest can be seen even in such serious conditions as typhoid perichondritis and laryngeal tuberculosis.

The author states that careful attention should be paid to the following points: 1. Preservation of the cough reflex by omission of anesthetics and sedatives. 2. Deliberate work in the midline with careful hemostasis. 3. Careful after-treatment with frequent changing of the dressing. 4. Asepsis. 5. The Trendelenburg-Roser position the moment the trachea is opened. 6. A canula of the proper size and length.

Of one hundred tracheotomies performed by the author, eighty-six recovered. Ten deaths resulted from the conditions requiring the tracheotomy. In three cases death was certainly due to the tracheotomy itself.

Purulent Diseases of the Middle Ear—the Treatment of Meningeal, Sinus and Labyrinthine Complications. S. MACCUEEN SMITH. *The Therapeutic Gazette*, March 15, 1909.

Meningitis comprises the most frequent intracranial lesion complicating aural disease, the underlying or primary lesion in the ear being entirely overlooked until a spontaneous rupture of the drumhead liberates a quantity of pus through the external auditory canal. Meningitis from aural disease differs from that due to other causes chiefly in that the symptoms are much more severe and that the disease is amenable to operation. The operative procedure consists in eliminating the focus of the disease by removing all the necrotic bone, including a complete exenteration of the mastoid cells, thus exposing the affected dura. When necessary, the membrane should be incised to provide for the escape of any fluids, just as is done in the serous form of meningitis.

The author believes that a pyemic state does not necessarily mean a sinus thrombosis. He cites two cases of metastatic abscesses of the liver which were traced directly to a suppurative process in the organ of hearing in which, on autopsy, the sinuses were not involved in any way. The consensus of opinion favors ligation of the internal jugular vein when the sinus contains pus, a disintegrated clot or more especially when a thrombus is felt along the course of the vessel.

In labyrinthine suppuration, the mode of infection is usually through the fenestra rotunda, the fenestra ovalis, the promontory or the horizontal semi-circular canal. This invasion may also occur by way of the aqueductus vestibuli, the aqueductus cochleæ and the posterior or superior canal. If during the radical mastoid operation, necrosis is observed to involve or pus is escaping from, one of the afore-mentioned localities, the surgeon, especially in the absence of definite labyrinthine symptoms, will find it hard to decide whether or not operative interference is absolutely indicated. Most of these cases spontaneously recover, with the good drainage provided by the radical operation and the removal of the granulation tissue from the infected window, but one should be careful not to disturb the protective adhesions that limit the focus of the disease to the labyrinth. If the fistulous opening is merely enlarged, the patient will generally recover.

Nerve Involvement in Fractures of the Extremities.

CARL S. OAKMAN. *The Journal of the Michigan State Medical Society*, March, 1909.

The lesions resulting to nerves from fractures of the extremities may be immediate—due to contusion, laceration or division—or remote, due to compression by cicatrix or callus. The musculo-spiral nerve is injured by fracture oftener than any other, and indeed constitutes 40 per cent., according to von Bruns, of nerve injuries accompanying fractures.

The pathology of a contused nerve consists of more or less necrosis of the nerve fibers, with hemorrhage into the sheaths and leucocytic infiltration. The continuity of the fibers, as a rule, is not interrupted and hence regeneration is rapid and function is quickly restored. In laceration there is a partial division of the nerve, but the intact fibers serve as a guide for a regeneration of the severed fibers and usually there is complete restoration. When a nerve is completely severed, both ends retract and there is degeneration of the distal portion. The proximal end grows into a nodule the same as occurs in amputation stumps. But the axone of the distal portion probably retains its integrity for a long time, so that when neuroplasty is done, even months after division, it sometimes promptly regains its function and nearly always does, sooner or later.

The symptoms resolve themselves into paralysis and anesthesia of the parts supplied by the injured nerve. The area of anesthesia is often less distinctly delimited, because the overlapping and anastomosis of sensory fibers is more complex than of motor fibers.

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A CONTRIBUTION TO INTESTINAL SURGERY. ASEPTIC INTESTINAL ANASTOMOSIS (ENTERO-ENTEROSTOMY AND GASTRO-ENTEROSTOMY.)

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A method similar to the one here to be described was published by one of us (V. Pleth) in the AMERICAN JOURNAL OF SURGERY, June 1906, entitled, "*A Simple and Practical Method of Performing Intestinal Anastomosis by Means of Two Knitting Needles.*" Soon after, we modified the procedure, making the technic still simpler and absolutely aseptic. We have now tried the method for about two years and have had no deaths, that could be ascribed to it, though often operating under such trying conditions as only medical men know, who have practiced in a land like Mexico. Intestinal lesions are very common here, due to the terrible frequency with which the Mexicans use their knives to settle even trivial difficulties; it is an ordinary sight to have a man brought to the hospital with stab wounds, up to twenty or more in number, and the intestines lacerated and protruding from the abdomen. It is even more remarkable that many people wounded in this manner recover from these terrible injuries. Perhaps it is due to their mode of living, most people in the tropics of Mexico eating little or no meat, beans being the principal food.

When performing an entero-enterostomy, the angiotribe is applied at right angles to the axis of the piece to be removed and its blades are forced tight together; a Pagenstecher's linen thread is applied in the impression produced by the angiotribe and tied firmly. The stump is not inverted*; only lateral anastomosis is practiced; end-to-end anastomosis being rather difficult to perform by the method here described.

THE STEPS OF THE ANASTOMOSIS:

I. The gut-arms (or parts) to be united are laid side by side and approximated near their mesenteric borders by a continuous linen thread suture, passing

* This method was described by Alex. Ferguson of Chicago six or seven years ago. Ferguson, however, does not employ an angiotribe but merely a forceps. Lilienthal (AMERICAN JOURNAL OF SURGERY, March, 1909), does not seem to know of Ferguson's work.

through only the serosa, for a distance of 6 to 7 cm. This we term the "first posterior suture" and black thread may be employed for this.

2. A second continuous suture is applied parallel with the first one and very close to it; large grasps of the intestinal wall are taken up so as to effectively compress the vessels, this we term the "second posterior suture" and it may be of white thread.

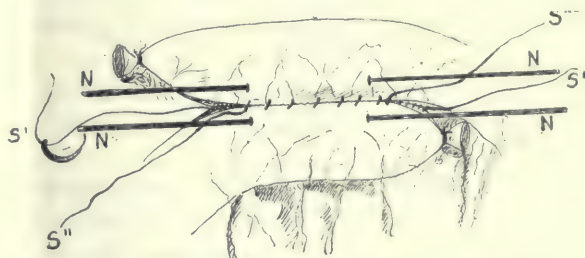


Fig. 1. Gut Arms Laid Side by Side. First and Second "Posterior Sutures," s' s' and s'' s''. Inserted. Knitting Needles in Place, n—n.

3. An ordinary long steel knitting needle is passed into the lumen of one limb of the gut and out again at the desired distance, the knitting needle being parallel with the "posterior sutures" and about 1 cm. from them; the distance between the points of entrance and exit of the needle being less than the length of the "posterior sutures."

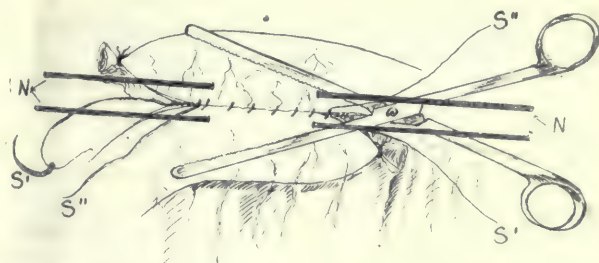


Fig. 2. Forceps Placed Beneath the Needles and Around the Bridge Which Overrides the Needles.

4. The same procedure is repeated on the other limb of gut to be anastomosed. (Figure 1.)

5. The needles are now brought close together and held securely.

6. A long narrow-bladed forceps is placed beneath the needles (Figure 2), and, compressing the opposed portions of the intestines, is securely locked. (Figure 3.)

7. A Paquelin cautery burns away that portion of the intestine, which "bridges" over the needles. Burn until the needles are released. (Figure 4.)

8. The "second posterior suture" (white thread) is now continued around in front until it reaches the starting point; this is the "first anterior suture." (Figure 5.) The handle of the compressing forceps should always be placed at the starting point of the intestinal suture.

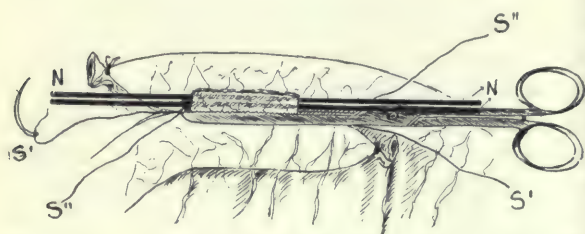


Fig. 3. Forceps Locked. Knitting Needles brought Close Together. Intestinal "Bridge" Ready to be Burned Away.

9. The compressing forceps is now gently removed and the free ends of the "second suture" are tied together.

10. The "first posterior suture" is now continued around in front until it reaches its starting point, when the free ends are tied together; this is the "second anterior suture." (Figure 6.)

As may be seen, the method is rather simple and does not require much expertness. In the article in the AMERICAN JOURNAL OF SURGERY, June, 1906, the procedure is the same as in this article up to step 6, when instead of a forceps being applied, a silk-worm gut suture passes backward and forward

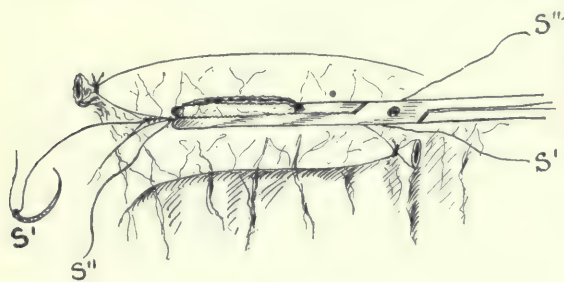


Fig. 4. Bridge is Burned Away, Releasing the Needles. This Establishes the Openings.

through the opposite intestinal walls in such a manner that the suture always runs under the knitting needle; the stitches are taken close together; the suture is pulled taut and the intestinal "bridge" over the needle is scraped away until the needles are released. The "posterior sutures" are now continued around as described in Steps 8 and 10. It occasionally happens that some slight hemorrhage takes place, when the suture-method is employed; but with the forceps method absolutely no hemor-

rhage can obscure the suturing and no time has to be given up to wiping the blood away.

Another practical point in the needle-and-forceps-method is that by lifting up the handle of the forceps, the whole field of anastomosis is brought into full view, thus facilitating the suturing of the opposed intestinal parts.

We have several times employed fine iodized or

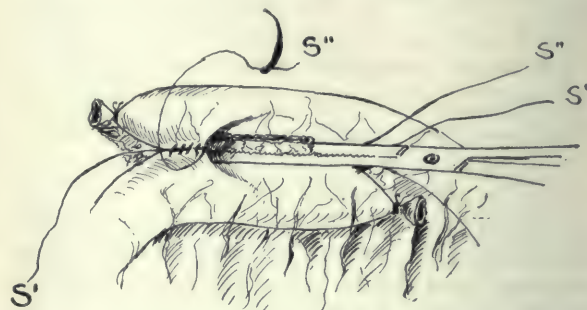


Fig. 5. Serosa Joined Around the Forceps, Completely Burying it Between the Opposed Intestinal Walls ("First Anterior Suture").

chromicized catgut for the "first posterior suture" and strong linen or silk thread for the inner or "second posterior" ("first anterior") suture."

At autopsy on several dogs, months after performing anastomosis according to this method, it was observed that absolutely no thread remained in the intestinal wall as early as three months after the operation. By making the stoma sufficiently large there is no danger of contraction taking place. (Such contraction was observed in one case in our hospital, where a gastro-enterostomy was per-

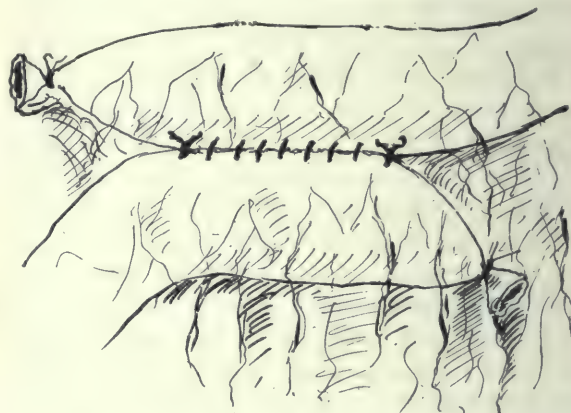


Fig. 6. Forceps Removed. "First Posterior Suture" Continued in Front as "Second Anterior Suture." Anastomosis Completed.

formed with the Murphy button. Three months after, the opening had contracted so that hardly a lead pencil could pass through it.)

Aside from the asepticity of the method here described, it has the advantage that no foreign body is left in the intestine to cause obstruction as in one case, where one of us (V. P.) had to remove a

Murphy button put in some six months previously by a very competent surgeon. If buttons or bobbins must be employed, we always prefer some absorbable substance, *e. g.*, the decalcified bone button of Dr. Jacob Frank, of Chicago.

* Up to date the needle-and-forceps method has been employed in thirty-two cases of gastro-enterostomy (anterior or posterior) and entero-enterostomy.

THE OCHSNER TREATMENT OF APPENDICITIS.

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The great majority of physicians understand Dr. Ochsner's postulates and "thousands of surgeons faithfully follow them" in treating appendicitis. The treatment has been publicly endorsed by the Mayos, Murphy, Morris, Matas, Richardson, Rodman and many others. Nevertheless, we hear it frequently stated that the treatment is misunderstood, that it is made the excuse, by many physicians, for advising against operation, and that when carried out it often results in defeating an operation for the reason that the patient, feeling himself relieved, refuses to submit to the removal of the appendix.

At the last meeting of the American Medical Association in 1908 R. T. Morris, in closing the discussion of his own paper on "Appendicitis" said, "The Ochsner treatment is one of the greatest points ever made in the history of appendicitis, but the Ochsner treatment, as comprehended by the average physician of New York, is damnable." C. E. Thompson said, in the same discussion, "The Ochsner treatment means, to the general country practitioner, do not operate; many of these practitioners have always been opposed to surgery and now they assert that a great surgeon in Chicago is saving nearly all of his cases by not operating on them. The treatment has been misunderstood and has thus been the cause of filling many untimely graves."

In the above statement of Morris we have the highest testimony of the value of the Ochsner treatment, together with his condemnation of the misuse of it by the average physician. While we do not believe there is such a lamentable misconception of the treatment here as Dr. Morris would lead us to believe exists in New York, yet I feel that there is such a degree of misunderstanding in reference to it as to justify a brief consideration of the subject at this time.

Ochsner described his treatment in full before the Chicago Medical Association, October 10th, 1900, giving in this original paper the results of eight years' employment of the treatment. At that time he set forth certain propositions in reference to the treatment which were very widely quoted in medical journals. Greater prominence was given to his method when he presented it in his Chairman's address before the Section on Surgery at the Fifty-second Annual Meeting of the American Medical Association at St. Paul in 1901. He deserves great credit for systematizing the results of his own observation and experience, for calling attention to the admirable protection which nature affords the appendix by its anatomical surroundings, and for the danger occasioned by peristaltic motion in the small intestine. In his second paper he described (a) the attempt on the part of nature to close the ileo-cecal valve to prevent the passage of the intestinal contents into the inflamed area, (b) the movements of folds of the omentum toward and around a seat of injury, (c) the increased peristalsis occasioned on the introduction of food into the stomach (d) the exudate and new formation thrown out by the peritoneum to wall off the inflamed appendix, (e) the harmful influence which cathartics exert by disturbing the inflamed tissues, and by carrying infectious material to other parts of the peritoneal cavity, (f) the toxic character of stomach contents and (g) the danger of operation at the acme of septic intoxication.

We may best describe the treatment by giving his conclusions or postulates:

1. Patients suffering from chronic recurrent appendicitis should be operated upon during the interval.
2. Patients suffering from acute appendicitis should be operated upon as soon as the diagnosis is made, provided they come under treatment while the infectious material is still confined to the appendix, if a competent surgeon is available.
3. Aside from insuring a low mortality this will prevent all serious complications.
4. In all cases of acute appendicitis, without regard to the treatment contemplated, the administration of food and cathartics by mouth should be absolutely prohibited and large enemata should never be given.
5. In cases of nausea or vomiting, or gaseous distention of the abdomen, gastric lavage should be employed.
6. In cases coming under treatment after the infection has extended beyond the tissues of the appendix, especially in the presence of beginning diffuse peritonitis, fasting and gastric lavage should always be employed until the patient's condition makes operative intervention safe.

7. In case no operation is performed, neither nourishment nor cathartics should be given by mouth until the patient has been free from pain and otherwise normal for at least four days. The same practice should be followed after operation.

8. During the beginning of this treatment not even water should be given by mouth, the thirst being quenched by rinsing the mouth with cold water and by the use of small enemata. Later small sips of very hot water, frequently repeated, may be given, and still later small sips of cold water. There is danger in giving water too freely, and there is great danger in the use of large enemata.

9. All practitioners of medicine and surgery, as well as the general public, should be impressed with the importance of prohibiting the use of cathartics and food by mouth, as well as the use of large enemata, in cases of patients suffering from acute appendicitis.

10. It should be constantly borne in mind that even the slightest amount of liquid food of any kind given by mouth may give rise to dangerous peristalsis.

11. The most convenient form of rectal feeding consists in the use of one ounce of one of the various concentrated liquid predigested foods in the market, dissolved in three ounces of warm normal salt solution, introduced slowly through a soft catheter inserted into the rectum a distance of two or three inches.

12. This form of treatment can not supplant the operative treatment of acute appendicitis, but it can and should be used to reduce the mortality by changing the class of cases in which the mortality is greatest into another class in which the mortality is very small after operation.

To conclusion 8 are now regularly added the method, introduced by Murphy, of administering a continuous enema of normal salt solution, and, in case of diffuse peritonitis, the Fowler position.

The clearness of statement in these conclusions should be a guarantee against misconception or misunderstanding, and the soundness of the principles upon which they are based should secure for them general recognition.

One misconception relates to the extent to which the treatment applies. Physicians generally seem to assume that the Ochsner treatment refers to fasting and rest without reference to other phases of the treatment. They fail to note that the second postulate recommends early operation when practicable in all cases, and that other postulates cover indications for treatment of the severe as well as the interval cases.

There is no suggestion in these postulates that this treatment is to serve as a substitute for operation. It is from beginning to end surgical, or a preparation for surgical measures. The starvation part of it should perhaps be called Ochsner's preparation rather than his treatment; for his treatment

proper includes operation. We should bear in mind that the treatment includes preparation, operation and after-care.

It is difficult to account for the persistent misinterpretation of the author's clear statement of every detail of this treatment. The harm that some attribute to its employment is the result of its misuse rather than of any inherent defect in the treatment itself. Here, as in many other questions relating to medicine and surgery, good judgment is a *sine qua non*. Defective judgment, as we know, may make shipwreck of any treatment and of all opportunity.

Ochsner distinctly states that all persons who have suffered from an attack of appendicitis will sooner or later come to operation. The fasting and rest so strongly emphasized in the treatment has been of very great advantage to all surgeons, whether they operate early or late for, as pointed out by Ochsner, many patients have recovered after operation because their surgeons have learned to give neither food nor cathartics after abdominal operations, so it may be said that they receive the treatment notwithstanding the operation. It is evidently to this phase of the treatment that Morris refers when he says that he prefers the quick operation with fasting, leaving the patient to his opsonins and phagocytes.

During the eight years prior to Ochsner's first publication there were no uniform plans of treatment in reference to any of the types of appendicitis. And since that time the greatest difference of opinion and practice has prevailed. Many distinguished surgeons have helped very materially in establishing certain principles of treatment; some have emphasized the advantages of quick operation with small incision for a certain class of cases; others, the advantages of the intermuscular opening; while others have insisted upon early operation for all cases; but no one except Ochsner has succeeded in formulating rules applicable to so many classes and conditions of appendicitis. In his conclusions there are, of course, no rules assumed to be applicable to all cases but certain important principles are enunciated which have a very general application and which give to the treatment a distinctive character.

We may illustrate the advance made by Ochsner over much of the teaching of the day by a brief comparison of opinions on a few important points. Compare, for instance, his positive and rational postulate that all cases seen in the first twenty-four or thirty-six hours, should, if practicable, be operated upon, with the teaching of the International Text-book of Surgery by Warren and Gould, which says

that in many mild cases operation should be delayed until the acute attack has passed; or with Robert's Surgery which says, "If the symptoms show little increase in severity during the first twelve hours it is probable that the case will do well and that operation will not be required;" or with the English surgeon, Walsham, who says that "in mild cases he would not follow the American dictum, to operate always within the first twenty-four hours, but wait and operate in the interval;" or with Vaughan's advice that "if for any reason it is decided not to operate in the early stages of the disease the patient should be freely purged with sulphate of magnesia;" or with Tiffany who says that "the medical treatment should consist, among other things, of free purgation and the appendix, provided the disease is advancing, should be removed, preferably within the first two or three days;" or with DaCosta, that "in an ordinary mild case it is best to defer operation, experience showing that purging by means of Epsom or Rochelle salt is beneficial;" or with the American Text-Book of Surgery which says, "in cases of mild type, seen at the start, the treatment should consist, among other things, in moderate purgation by calomel in fractional doses followed by salines or by castor oil and enemata." It will be seen from these brief quotations that in the matter of early operation he is more radical than many of the so-called radicals, and infinitely saner in refraining from the use of purgatives and in the withholding of food.

A few quotations from the same authors will further illustrate the truth of the latter statement. Thus, Robert's text-book says nothing about dieting or fasting; Von Bergmann says only, that "the diet should be restricted;" Brewer, that "catarrhal appendicitis which has passed the acute stage may be treated by rest, ice-bag, catharsis and an opiate, if necessary, until the attack has subsided;" and Warren who says that "when nausea and vomiting has ceased nourishment may, of course, be given."

The contrast between Ochsner's treatment of perforative and gangrenous appendicitis and that prevalent a few years ago, still advocated in most of our current text-books and practiced by many surgeons, brings the advantages of the former treatment into relief.

Von Bergmann recommends for these cases with pyrexia, uniform distention, tenderness and rapid pulse, "operation, preferably not later than the second or third day;" DaCosta, "if there is marked tympanitic distention operate at once"; Walsham, "In acute perforation with gangrenous appendix immediate operation gives the only chance, and in

suppurative cases operate at once;" Rose and Carless, "In case of perforation in the first, second or third days, provided it is advancing, operate." American authors are not so ready to recommend prompt operation in this condition as they were a few years ago, doubtless largely due to Ochsner's teaching on this subject.

To review briefly the Ochsner treatment:—In all cases of acute appendicitis all food, water and cathartics by mouth are prohibited. If nausea persists gastric lavage is repeated once or twice at intervals of two to four hours. In all cases seen within thirty-six hours, which give no evidence of perforation or diffuse peritonitis, immediate or early operation is performed. In cases in which recovery seems doubtful the operation is to be postponed and the Ochsner starvation preparation carried out, and in such cases a late operation is to be performed with complete removal if infection is confined to the appendix, or if circumscribed abscesses have developed they are to be opened and drained. The advantage of this treatment is that there is almost no mortality. The patients are promptly cured, suffering is reduced to a minimum and complications are not liable to occur.

Another class deriving great advantage from this treatment includes those suffering from gangrenous or perforated appendicitis. These patients usually have high temperature, marked tympany and rapid pulse; there is complete obstruction of the passage of gas or feces, nausea or vomiting and marked meteorism; the pulse is small and quick, respiration rapid, parietes over appendix tense. "The patient," says Ochsner, "is in the condition in which I formerly operated at once—day or night—as a last resort, only to find that it was too late in more than one-third of the cases, the mortality increasing with the time that had elapsed since the beginning of the attack." This is the class of cases of which Richardson has said, they are "too late for an early and too early for a late operation."

In cases of perforative or gangrenous appendicitis, with and without abscess, concerning which there is perhaps the greatest diversity of opinion, the Ochsner treatment has succeeded in greatly reducing the mortality. In a series of a thousand consecutive cases of appendicitis, reported by him, there were 55 cases of perforative or gangrenous appendicitis with abscess belonging to this class; all treated by the starvation preparation and subsequent operation without a death. In all of these cases food by mouth and cathartics were prohibited, gastric lavage was employed, exclusive rectal feeding was instituted and continued for one week or

longer until they were normal as regards temperature, pulse and absence of pain in the region of the appendix.

The operation was performed in most cases within four days after admission to the hospital; in others the period of preparation treatment was longer. In all cases the appendix was completely surrounded by omentum and new wall formation, effectually circumscribing the infectious material.

In the same series there were 117 cases of acute perforative or gangrenous appendicitis with peritonitis and abscess, admitted to the hospital after the third day from the beginning of the attack. There were but four deaths. All of these patients had received, prior to coming to the hospital, cathartics and some food.

The mortality in these 172 cases of acute perforative or gangrenous appendicitis was only 2.9 per cent. It is in this class of cases that we formerly had such a high mortality, variously estimated from twelve to eighteen per cent.

Of twenty-six cases of acute appendicitis with diffuse peritonitis on entering the hospital, treated by this method and operated upon, there were but three deaths, a mortality of 11.5 per cent., against the very high mortality from the most favorable statistics of cases operated as soon as the diagnosis is made.

Of one thousand cases thus treated by Ochsner from July 1, 1901, to April 1, 1904, including the cases reported above, the mortality was but 2.2 per cent. This list included seven cases of diffuse peritonitis not operated upon because they were in a dying condition when admitted to the hospital. Omitting these cases there were 993 cases operated upon with but fifteen deaths, a mortality of 1.5 per cent. Leaving out the 540 cases of chronic appendicitis and interval operations, Dr. Ochsner's percentage of mortality for operations, both early and late, in acute appendicitis is 2.6. Since then the mortality rate has been still further reduced.

About the time of the publication of Ochsner's report, Richardson reported his elaborate study of 750 cases in which operation for acute appendicitis was done by the rules then generally in vogue, showing a mortality of eighteen per cent.

My own results in applying this treatment have been most satisfactory and have convinced me that the Ochsner treatment of appendicitis is founded upon sound surgical principles—principles which apply in some measure to many other inflammatory processes.

The more carefully we study these principles and the more clearly we see them worked out in actual

practice, the more will we realize their truth and vital importance. The postulates should be studied as a whole and they should be studied in connection with Ochsner's other classical and epoch-making papers and reports on this subject. Thus will the misconception, which to the shame of the profession is quite too general in reference to this treatment, be corrected. Then shall we realize that the Ochsner treatment is not a medical treatment but surgical from beginning to end; that to withhold food and lavage the stomach is to secure rest and conserve strength; that to limit the peristalsis and thus give the inflamed appendix and its environment a rest, is just as rational as to splint a fracture or to exclude a light from an inflamed iris or retina.

Then shall we understand that the Ochsner treatment is no substitute for operation but includes both preparation for operation and the operation itself, and that preparation here is just as essentially surgical as the preparation for other operations, albeit less mechanical. We shall then realize that the points urged in these postulates have a broad application and, taken separately or collectively, are of vital importance no matter what plan of treatment is followed.

Then we shall realize, too, that Ochsner is not timidly conservative but safely radical, for he declares, in these postulates, that patients suffering from acute appendicitis should be operated upon as soon as the diagnosis is made providing they come under treatment while the infectious material is still confined to the appendix and he is progressive and bold enough to delay operation in perforative and gangrenous cases until nature can wall off the infected area and raise the patient's power of resistance, while others are maintaining that immediate operation gives the patient his only chance.

And he is staunch enough and loyal enough to his convictions not to be persuaded into operating at an unfavorable time simply for fear that the patient, if relieved of pain, may refuse operation later.

At present almost all appendicitis patients have had food and cathartics before coming under the surgeon's care. This was true of Ochsner's one thousand cases. The physician sees them a day or two before the surgeon and this is admittedly a critical time. With this treatment, notwithstanding the damaging influence of food, water and cathartics, early operations have reduced the mortality to less than one-half of one per cent.; and in all cases it has reduced it approximately from 12 to 2.5 per cent. How much more might we reduce it if physicians generally as well as surgeons would all apply the principles of this treatment in the critical hours

before the patient enters the hospital, as well as thereafter. Is it not rational to believe that we should thus still further reduce the mortality from this disease?

THE ORBITAL ROUTE TO THE ACCESSORY SINUSES.*

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(With illustrations by the author.)

The early records of accessory sinus disease are found in ophthalmologic or surgical literature and deal mainly with ocular and orbital complications. The interest of ophthalmologists in this question is not merely one of ancient history. Through force of circumstances and the practical requirements of such conditions as fistula of the lid, sub-periorbital

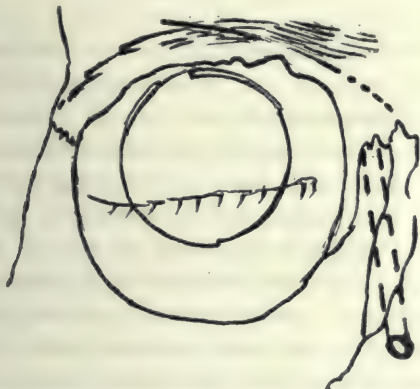


Fig. 1. Ogston-Luc. Opening (5 mm.-15 mm.) Inner End of Sinus. Curettage of Duct. Drain Into Nose.

abscess, pre-lachrymal tumor and phlegmon, an external route was thrust upon them which the rhinologists have subsequently developed, but which many, for some reason, still hesitate to adapt. The endonasal route is still favored and recommended for the "broad opening" of the sinuses in cases of orbital complication, even by those authors who have contributed widely to the study of the involved and variable topography of these structures.

Even in the development of the external operations there has been a fear of directly attacking the accessory cavities by their orbital walls, and this led to trephining or to small and ineffectual openings, such as those of Ogston, Praun (Fig. 1), into the anterior wall of the frontal sinus (ethmoid and sphenoid) through the maxillary antrum or frontal sinus, and finally, to complicated procedures of

* Read before the Section on Laryngology and Rhinology, New York Academy of Medicine, April 28, 1909.

major surgery, such as decortication of the face, osteoplastic resection of nasal bones (Fig. 2), superior maxilla, hard palate (Goris, Moure, Bardenheuer, Gussenbauer), all of which were bloody, serious or disfiguring. Even comparatively recent proceedings such as those of Jansen, Riedel, Kuhnt, and the first operation of Kilian, failed to effect a

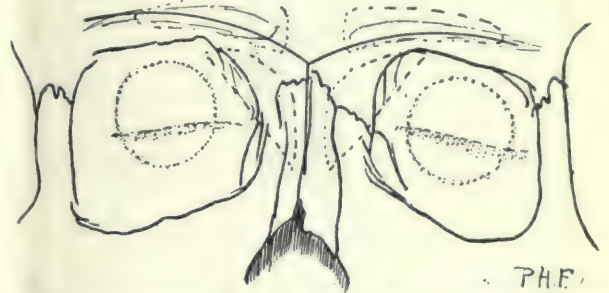


Fig. 2. Gussenbauer. Osteoplastic Resection of Fronto-Naso-Ethmoidal Structures.

wide exposure of the orbital walls, especially on the inner side and compensated by extensive removal of the frontal process of the superior maxilla and even of the nasal bones in order to ensure drainage. Two structures at the orbital margin dominated the entrance to the operative field, the pulley for the superior oblique and the lachrymal sac. Fear of injuring these parts seems always to have been a stumbling block to those who were not surgically familiar with the adnexa of the eye and the conditions at the orbital margin. The ophthalmologists were not slow to discover that both these structures could be avoided or side-tracked by appropriate measures. The spine for

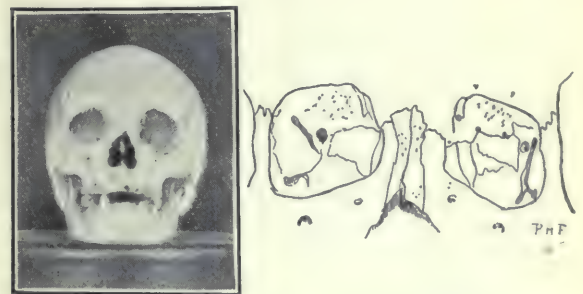


Fig. 3. Inclined Orbits. Marked Supra-trochlear Spine, Particularly Left.

the trochlea (Fig. 3) is the exception rather than the rule, as it is found in only from 7 per cent. to 12 per cent. of the cases, according to different anatomists, and, strangely, is more often missing on both sides than on one. (In the Cornell collection of about sixty crania, I found but two with a spine.) The spine can be easily detached with a narrow chisel or gouge, preserving its relation with

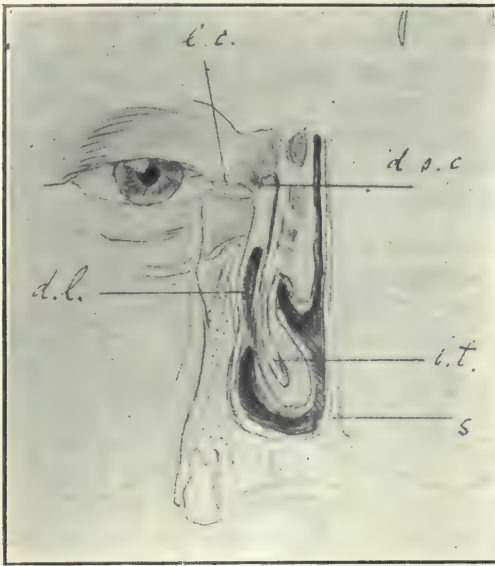


Fig. 4. Lachrymal Passages. Section. After Gegenbauer. *l. c.*, Canaliculi; *d. s. c.*, Dome of Sac; *d. l.*, Lachrymal Duct; *s.*, Septum; *i. t.*, Inferior Turbinate.

the periorbita, and laid back in its place at the completion of the operation. Where there is no bony spine, the careful elevation of the periorbita at the inner upper angle of the margin is sufficient to preserve the relations perfectly.

A skin incision down to the bone, is important, and this will also ensure, in many cases, the possibility of separating the upper part of the lacrimal sac (Fig. 4), from its niche in the lacrimal fossa (12, Fig. 5), and laying it back, provisionally. Where this is impossible or is rendered inadvisable

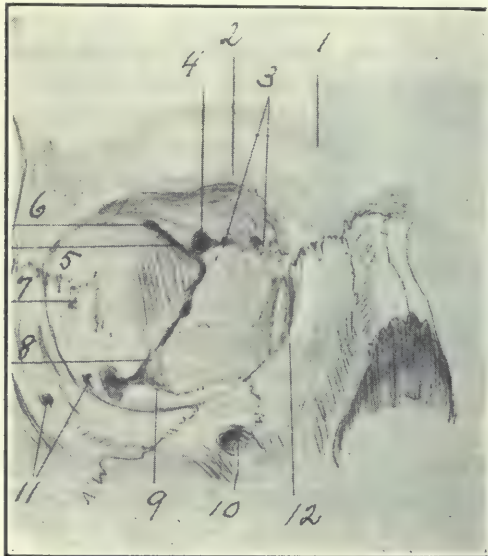


Fig. 5. Bony Orbit (after Merkel). 1, Frontal Eminence; 2, Supra-orbital Notch; 3, Ethmoidal Foramina; 4, Optic Foramen; 5, Spine, M. Rect. Ext.; 6, Sphenoid Fissure (Sup. Orb.); 7, Zygomatic Foramen; 8, Spheno-maxillary Fissure (Inferior Orbital Fiss.); 9, Infra-orbital Canal; 10, Infra-orbital Foramen; 11, Orbito-malar Foramen; 12, Lachrymal Fossa.



Fig. 6. Front View of Orbit. Showing Relation of Small (dark shaded), Middle Sized (medium) and Large (faint) Accessory Cavities to Its Walls.

on account of diseased walls, or the existence of suppurating cells in the immediate neighborhood, the tear passages may be cut through without hesitation. From our experience with extirpation of the sac we know that there are no complications to be feared and that even the obstinate epiphora which was expected does not usually follow.

Removal of the inner orbital wall, os planum and lamina papyracea with complete exenteration of the ethmoid cells and wide exposure of the frontal antrum, as advocated by Hartmann, has been the ophthalmologist's operation of choice in combined

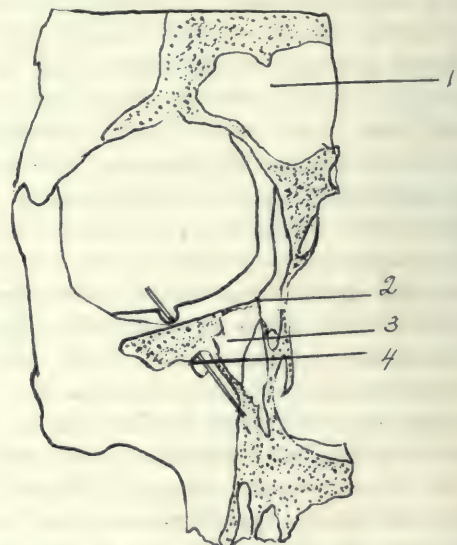


Fig. 7. Frontal Section of Orbit (after Dwight). At Orbital Margin. 1, Frontal Sinus; 2, Lachrymal Canal; 3, Maxillary Antrum; 4, Probe in Infra-orbital Canal.

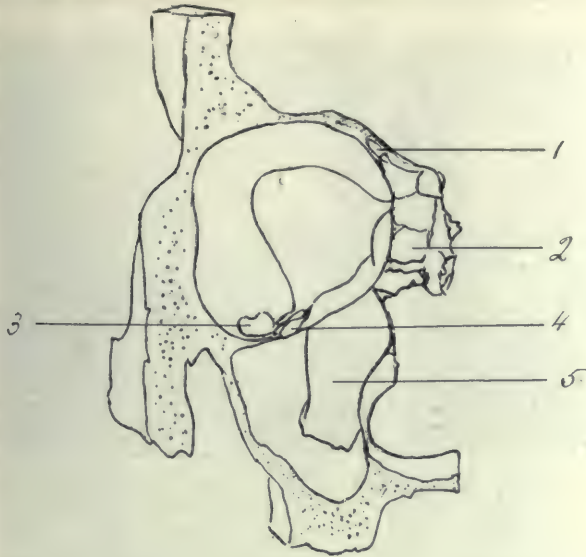


Fig. 8. Frontal Section of Orbit (after Dwight). About Middle of Orbit. Through Zygoma. 1, Frontal Sinus, Post. Recess; 2, Ethmoid Cells; 3, Spheno-maxillary Fissure; 4, Infra-orbital Canal; 5, Maxillary Antrum.

affections of the sinuses for years. We might well speak of these spaces as accessory to the nose and accessible to the orbit.

Objections to the intranasal route in extensive accessory sinus disease are based on the difficulty of finding the openings even in normal cases, the inefficacy of syringing in many cases, and the dangers of more thorough surgical procedures. Among the latter we may mention uncontrollable hemorrhage, injury to optic nerve, carotid, pterygo-palatine vessels and nerves, in curetting the sphenoid cavity, penetration of cranial cavity and frontal lobe from a defective posterior frontal sinus wall or lamina cribrosa, meningitis after tampon, after syringing, penetration of the floor of the orbit in an attempt to enlarge the maxillary ostium of the antrum, and so on. Danger of chiseling about the orbital margin in removing thick bone of the frontal process should also be borne in mind. Fissure extending into the apex of the orbit and sudden blindness, even contra-lateral, from direct com-

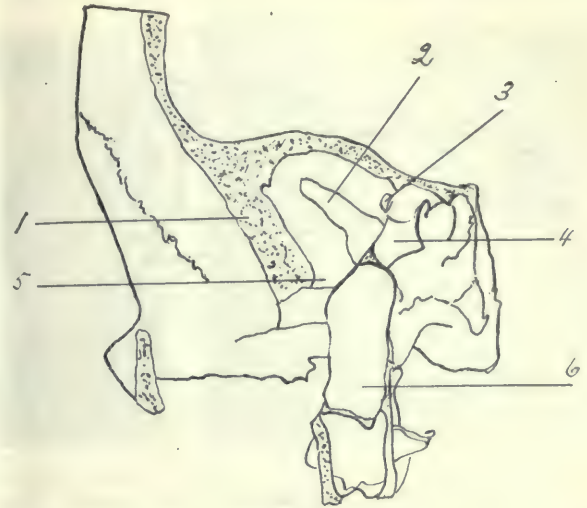


Fig. 9. Frontal Section of Orbit (after Dwight). At Apex. 1, Outer Wall of Orbit (Great Wing of Sphenoid) Bounding Middle Fossa; 2, Sphenoidal Fissure; 3, Optic Foramen; 4, Ethmoid Cells; 5, Spheno-maxillary Fissure; 6, Maxillary Antrum (Pterygoid Recess) Above Molar Tooth.

pression of the nerve within the optic canal has been recorded, an added reason for the orbital route through thin walls. The danger of such accidents, as well as of otitic infection, such as rather too frequently follow intranasal operations, seems decidedly greater than any possible injury to the orbit or its contents in the course of the external operation. First, the globe is held away and the periorbita carefully detached from the inner and upper wall; secondly, we proceed successively to open cavities which are seen before they are attacked; third, in case of post-operative infection we have a large communication with the nose for drainage, no necessity for tampons with accompanying stagnation, and, finally, the thoroughness of removal of diseased tissue is the best possible guarantee not only against relapse but against infection of neighboring structures. The wall of the orbit is the key to the serious complications of accessory sinus disease, pathologically, and to their cure, topographically and surgically.

The relations of the accessory sinuses to the



Fig. 10. Large Orbital Fissures. Numerous 'Accessory Foramina,' Particularly in Roof of Orbit, on Brow, in Lachrymal Fossa, and Below Inferior Orbital Margin.

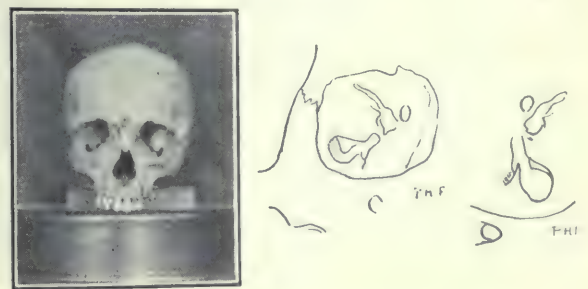


Fig. 11. Unusually Large Orbital Fissures. Anterior Oval Aperture of Spheno-maxillary (Inf. Orbital) Fissure, R. 10 mm., L., 8 mm. 'Extra-orbital' Lachrymal Fossa.



Fig. 12. Orbital Veins Showing Anastomoses with Blood Supply of Lids, Cheeks and Brow, Terminating Posteriorly in the Cavernous Sinus.

walls of the orbit are extensive and variable. (Figs. 6-9.) Almost the entire roof of the orbit may be formed by the lower wall of the frontal, its floor by the upper wall of the maxillary, antrum, while the ethmoid cells in every case form by far the greater part of the inner, or nasal, boundary. The openings into the orbit from the cranial cavity and sphenopalatine fossa frequently attain such dimensions that the terms "foramen" and "fissure" no longer apply, and the normal channels through the bony wall for vessels and nerves leading into the cranial cavity or into accessory sinuses are much more numerous than is usually supposed. (Figs. 10, 11.) A study of a large collection of crania* shows that

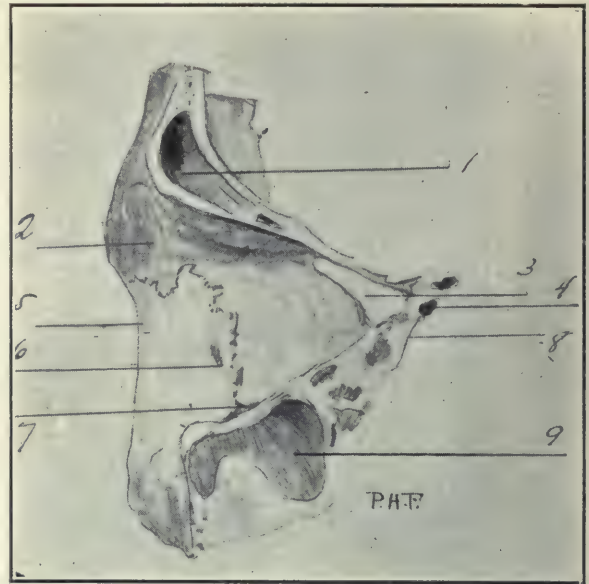


Fig. 14. Orbit. Side View of Temporal Wall. 1, Frontal Sinus; 2, Roof; 3, Sphenoid Fissure; 4, Optic Foramen; 5, Outer Wall; 6, Zygomatic Foramina; 7, Spheno-maxillary Fissure; 8, Floor of Orbit; 9, Maxillary Antrum.

gaps in the sutures, dehiscences, congenital or acquired, and perforations are numerous, the zygomatic and temporo-orbital foramina often large and multiple, while the roof of the orbit, near the

* Through the kindness of Dr. Irving Haynes the large and interesting collection of the Anatomical Museum of Cornell University, Medical Department, was placed at my disposition for study and measurements. Photographs and original sketches from these skulls and from a fresh head prepared to show the orbital route to the sinuses form the basis of the illustrations for this article.

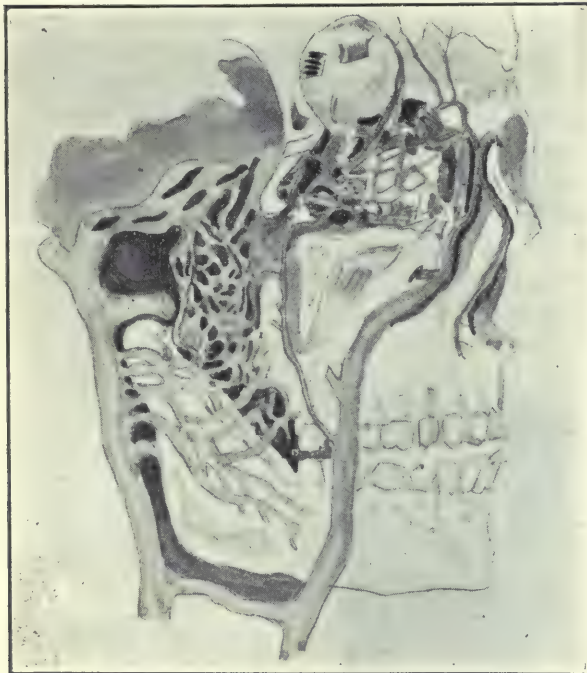


Fig. 13. Blood Supply of Orbit, Showing Relation to Veins of Maxilla, Antrum and Pterygoid Fossa.

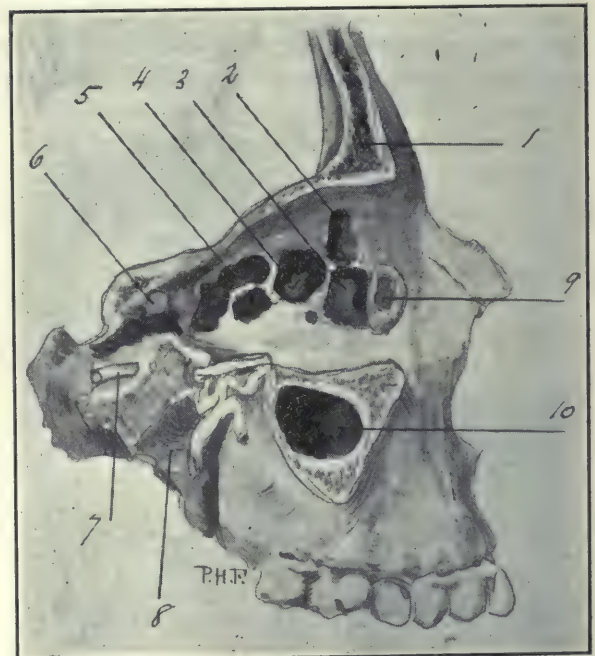


Fig. 15. Orbit. Side View of Nasal Wall. 1, Diploe of Frontal Bone; 2, 3, 4, 5, Ethmoid Cells; 6, Optic Nerve (Sphenoid Sinus Below); 7, Superior Maxillary Nerve; 8, Spheno-palatine Fossa; 9, Lachrymal Sac; 10, Maxillary Antrum.



Fig. 16. Horizontal Orbits. Flat Brow. No Indication of Supra-orbital Notch.



Fig. 17. High Orbits. Smooth Brow.



Fig. 18. Oxy-cephalic, Steep Skull. Marked Obliquity of Inner Wall of Orbit. Numerous Accessory Foramina.

margin, is often riddled with small foramina, and in one or two cases I have found it to be actually cribriform. The vessels which leave the orbit by the anterior and posterior ethmoidal foramina (A. et Vv. ethmoid, ant. et post; R, nasalis s. nasociliaris, n. trigemini), communicate directly with the anterior cranial fossa and the nasal cavities. The orbital veins (Figs. 12, 13), take up the return flow of blood from the lips and cheek, angular region between eye and nostril, interior of nares, brow, and front of scalp, communicate with the branches of the posterior facial which supply the upper jaw, teeth, and maxillary antrum, anastomose freely with the pterygo-palatine and with the sphenopalatine plexus and empty, via the ophthalmic vein, into the cavernous sinus.

There is a striking and interesting analogy with the middle ear and mastoid which extends to many points in the pathology and treatment of accessory sinus disease. Thus, drainage through the normal

channels does not always prevent retention and infection; intranasal cutting operations, like paracentesis, are often ineffectual; the extension of disease to the orbit or to the meninges generally takes place via diseased bone or by pus perforation, more rarely by venous channels. The treatment of the intracranial complications of accessory sinus disease is in its infancy, but the broad surgical procedures which have been systematically applied by otologists in their field must have similar results in diminishing the number of fatal cases of rhinogenous brain abscess, meningitis, and, let us hope, of sinus thrombosis. Considering the lack of characteristic symptoms, the latency and the variable course of these complications, we may be excused for overlooking an intracranial infection for a time, but, given a bone diseased to the dura, we cannot be excused for failing to clean it out thoroughly, nor for being deterred, after tracking the infection to a frontal lobe abscess, from free incision and eva-



Fig. 19. Prognathic Skull, Probably Negro. Large and Massive Inferior and Superior Maxilla. Numerous Small Apertures (Vascular Pori) in Anterior Part of Orbital Roof.

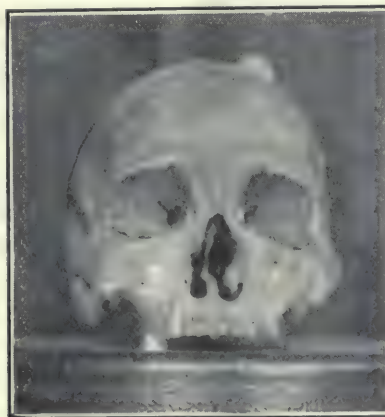


Fig. 20. Indian Skull. Broad Facial Skeleton. Thick Outer Orbital Wall. "Extra-orbital" Lachrymal Fossa.



Fig. 21. Marked Frontal Protuberance. Heavy Orbital Margins. Zygomatic Foramina (2).

cuation with drainage at the lowest possible point.

The apparent rarity of rhinogenous intracranial complications is partly explained by the fact that until recently, the nose and accessory sinuses were not included in the routine of post-mortem examinations. Frontal lobe abscess may give slight symptoms, if any, and focal indications are rare. Rhinogenous meningitis is like any other meningitis, and the headache, fever, and other subjective symptoms have been frequently attributed, no doubt, to severe but still uncomplicated accessory sinus disease, or, as has occurred in otitic complications, to typhoid, malaria, and other systemic diseases.

Conclusions. The orbital route is imposed on us by such complications as fistula, protrusion of any sinus wall into the orbit whether with or without exophthalmos and dislocation of the globe, unmis-

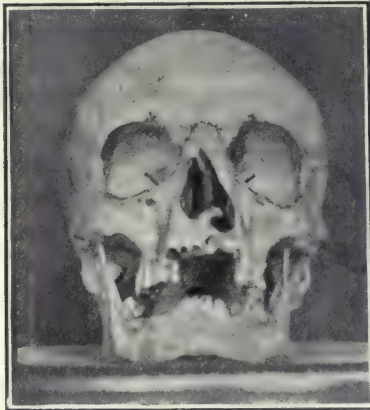


Fig. 22. Marked Supra-orbital Notch. Accessory Infra-orbital Foramen.

takable evidence of sub-periorbital abscess, or of general orbital cellulitis of accessory sinus origin, and by cerebral symptoms, persistent headache and pain, progressive blindness or optic nerve affections of similar origin, which do not yield promptly to intranasal treatment.

The lacrimal sac need not be considered. Its provisional removal from the fossa is not always feasible. The pulley of the superior oblique need not be injured if the periobita is carefully elevated at the inner upper margin of the orbit. A trochlear spina is rarely present, and may be detached with a small chisel if intimately connected with the periobita. Diplopia rarely follows the orbital operation as performed by ophthalmologists, but has been noted not infrequently in the other external operations.

The free detachment of the periobita at the inner and upper border of the orbital margin and for some distance along the inner and upper wall is a

sin qua non for a complete survey of the operative field and for a consequently complete and satisfactory operation.

Early and thorough operation by the route of the inner and upper orbital wall, in the appropriate cases, may be relied upon to remove the source of infection in the accessory cavities and to reduce the number of orbital complications, of rhinogenous blindness, and of intracranial infections.

TROPIC JOINT DISEASES.*

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Etiology.—We are so accustomed to associate any trophic lesion with nerve degeneration that we have almost forgotten that a true trophic disturbance may be due to any condition that induces faulty metabolism. This may come from either a disturbance in the blood supply to a part or to some nerve degeneration.

Joint diseases may be classified under three great divisions. First: traumatic, which would include contusions, sprains, fractures, dislocations, loose bodies and non-infected wounds. Second: The *infectious* conditions, which would include infected wounds; the extension of an inflammation into the joint from contiguous tissues, and those so-called hematogenous infections coming from acute or chronic general diseases. In this latter class the typhoid bacillus, the pneumococcus, the gonococcus, the tubercle bacillus and the common pus organisms are to be particularly mentioned. Some authorities place rheumatism in this class, but until the true etiologic factor in this disease has been isolated, it is just as well to consider it in the class of unknown infections, such as smallpox, measles, scarlet fever and mumps, differing from the latter however in that rheumatism is neither infectious nor contagious and one attack predisposes to future attacks.

The third great class includes the trophic disturbances and according to our late authorities these are divided and include the following type of cases: 1, the atrophic type. 2, the hypertrophic type. 3, the gouty type. 4, the hemophilic type. 5, the villous type. 6, the neuropathic type. These may all be classified as chronic non-tubercular arthropathies.

Pathology.—The pathology of these non-tubercular conditions may vary from a simple mon-

* Read before the Madison County, Medical Society at a special meeting on May 26, 1908.

articular serous effusion to ulceration, degeneration and complete disassociation of all the joint tissues. In some of them ankylosis occurs from the organization of the degenerated tissue. In others ankylosis may be due to the new formation of bone at the margin of the joint and beneath the ulcerated cartilage. The former type of ankylosis may also occur as a sequence to some of the acute infections while the latter exhibits itself as the characteristic feature of those conditions which we term senile coxitis, spondylosis deformans and Heberdens nodosities. The fungous type exhibits itself in relaxed and weakened joints and where the extra irritation permits an overgrowth of synovial membrane. When these overgrowths form tags they may be pinched off and become the so-called joint mice. Pieces of cartilage or bone may also be separated in this manner and form free bodies in the joints.

Diagnosis.—The atrophic and hypertrophic type of joint dystrophies are classified under the general name of arthritis deformans. In this condition the cartilage is softened, fibrillated and absorbed and the bone ends may be smoothed and entirely bared of cartilage. At the side of the joints, however, there is an irregular proliferation of cartilage cells producing nodes that later ossify. Accompanying this condition there is a thickening of the ligaments and atrophy of the bones and muscles. According to its occurrence it has received a number of special names. There is an acute progressive form occurring in young women and frequently following childbirth, and a chronic polyarticular form that may extend over years and ultimately produce that condition known as the ossified man or woman.

Another form beginning as an acute polyarticular arthritis (first described by Still, hence termed Still's disease), occurs in young children and is frequently associated with glandular and splenic enlargement. Occurring as a monarticular affection in the hips of old people, it is termed morbus coxae senilis. Affecting the spine alone, it is termed spondylitis deformans and when it occurs as a phalangeal dystrophy it is called Heberdens nodosities. The atrophic and hypertrophic types may merge into one another, but commonly the atrophic type is polyarticular, involves the peripheral joints and is accompanied by a primary synovial effusion later succeeded by atrophy of all the contiguous structures. The hypertrophic type is more frequently monarticular, effecting the hips, spine or fingers and a thickened synovial membrane and cartilage is followed by ulceration and

a proliferative formation of periosteal bone at the joint margin.

Arthritis Deformans.—Rheumatoid arthritis is another name that is applied to arthritis deformans. Merrins of New York after observing forty cases of this disease describes it as follows: "By rheumatoid arthritis is meant a constitutional polyarticular disease that may occur in either sex at any period of life, but which chiefly affects young and middle-aged woman. Commencing usually in the peripheral joints, it advances symmetrically toward the trunk, in its extreme form remorselessly crippling every joint in turn, even to the jaws and vertebrae, until the patient is reduced to a pitiable condition of helplessness and deformity. The principle accompanying symptoms are irregular fever, pain, anemia, vasomotor disturbance, deranged reflexes; muscular atrophy, tremors and cramps, and in children, enlargement of the spleen and lymphatic glands."

Herrick says that the acute onset of polyarticular arthritis deformans and the fact of acute exacerbations of the more subacute and chronic forms, should be kept in mind and looked on as of not infrequent occurrence. McCrae found a sudden onset in 40 per cent. of ninety-two cases. In the acute type of arthritis deformans there is not the shifting of the process from one joint to another as in acute rheumatism. Joints may be involved successively, but the first ones involved do not clear up as they do in true rheumatic affections. A high pulse rate is a persistent factor in these trophic disturbances and cardiac complications are rarely if ever seen. Another point is that salicylates are not only useless but are contraindicated. The sweating that occurs in true rheumatism is rarely observed in the trophic disease. When the disease has existed sufficiently long for joint changes to occur there should be no difficulty in making a differential diagnosis between the true rheumatic joints and the so-called rheumatoid degeneration. In the true forms of rheumatism, the pathology is that of a chronic hyperemia. The joint may be but slightly altered, but it is customary to find a thickened and hyperemic synovial membrane associated with similar changes in the capsule and ligaments. The tendons are enlarged but there is muscular atrophy from disuse. The amount of effusion in the joint is usually small.

Gouty Arthritis.—The gouty form is frequently likened to a true rheumatism, but gout is a nutritional disorder, one factor of which is an excessive formation of uric acid. It is characterized clinically by attacks of arthritis and the deposit of urate

of soda in and about the joints. This condition was supposed to be a rare one in the United States, but a number of cases are being reported by different observers in various parts of the country so that it is probable that the disease is not only on the increase, but that it is also being recognized when it does occur. Our idea of gout is to associate a sore toe with a rich patient. Herrick reports a typical case in an old negro painter, and one case in a woman, and but two out of seven recent cases were well-to-do or high livers. The finger, knee or wrist may be the first joints attacked. And even if the great toe is involved other joints may be implicated in permanent degenerative changes. Chalk stones should be looked for not only in the ear, nose and larynx, but also in and around the fingers, wrists, elbows and knees. Long standing cases show marked arterio-sclerosis which is exhibited as an interstitial nephritis, cardiac hypertrophy, myocarditis and pulmonary emphysema.

Hemophilic Arthritis.—The hemophilic type is fortunately extremely rare. It may be monoarticular or polyarticular and occurs most frequently in children; the knee is the joint usually involved. It is acute in onset and the joint is swollen, hot, painful and tender on pressure. Motion is limited and painful and recurring attacks are prone to follow the slightest injury. It is associated with effusions in the joint and ecchymoses. The disease should be recognized without much difficulty inasmuch as it is associated with a history of serious hemorrhages occurring on the inception of the slightest injury. The treatment is limited to fixation because a number of cases have resulted in death from fatal hemorrhages when a mistake in diagnosis caused operative measures to be instituted.

Neurotrophic Dystrophies.—The above includes all the trophic joint affections save the neuropathic dystrophies, and Barker has given us the following classification of joint innervations.

1. The atrophic joints associated with the cerebral and spinal palsies of children.
2. The joint disturbances associated with the bone lesions occurring in acromegaly, supposed to be a disease occurring as the result of a hyperplasia of the chromophilic cells in the pituitary body.
3. The intermittent joint effusions of unknown origin, first studied by Moore, of London, but later the subject of extensive research by Benda and Schlesinger.
4. The arthropathies occurring in the course of tabes dorsalis and paralytic dementia.
5. The arthropathies of syringomyelia.

6. The hysterical joints or the painful joints of psychoneurotics.

Intermittent Articular Hydrops.—The birth palsies are of particular interest at present inasmuch as the surgeon has invaded this field and secured some wonderful results by nerve bridging and nerve transplantation. The intermittent joint effusions are comparatively rare, yet Healy has recently reported three cases from the Chicago Polyclinic. In this connection there may be no sign or symptoms of inflammation in the joint, although it is customary to observe a small amount of heat or redness. The amount of effusion is also variable and limited to the capsule. The amount of pain is variable and in some cases causes only slight discomfort. In some patients it is associated with prodromal symptoms and general systemic disturbances of slight character. The particular feature of the disease is its intermittent periodicity. In some cases it returns with absolute regularity, after a definite number of days or weeks, varying with the patient, but without any ascertained external cause for its recurrence and without any pathologic change in the joint as a cause or as a result of the repeated attacks. Sex and age seem to have little or no bearing as an etiologic factor. In fact the only marked coincidence in the case histories that have been reported is that of five women who were subject to this disease, who reported an immunity to its attacks during pregnancy and lactation. In some cases there is a distinct history of antecedent injury. A careful study of the case histories show a predominating nervous element in all the cases, several cases being reported in which the attacks reappear subsequent to mental excitement or as a complication in neurasthenia, hysteria, epilepsy, exophthalmic goitre and multiple neuritis. It has also been observed in morphine habitues when the drug was abstained from. The prognosis of the disease varies directly with the patient. In some cases rest and psychic treatment have produced permanent cures, in others the disease has recurred in spite of all our therapeutic resources. One case being under observation for eighteen years.

Tabetic Arthropathies.—Stumpell in his latest work on medicine says, "The most interesting trophic disturbances we meet are those associated with Tabes dorsalis." The arthropathies and osteopathies first accurately described by Charcot. Tabetic arthropathies may exhibit itself as a benign or malignant form. In the benign form it is acute in onset, possibly painless but joint and contiguous

tissues are involved in a firm swelling; there is no redness and no pitting on pressure. It may appear and disappear in the space of a few days, leaving no signs of its occurrence. The malignant form is the most commonly observed and may succeed an acute attack. Not only is the joint involved but all the contiguous tissues are greatly swollen. Pain is usually present and may be very severe. The swelling is followed by a rapid degeneration of all the joint structures. The ligaments are loosened, the bones are softened and in some cases become very friable while subluxation or dislocation may occur in a short time. Flail joints are the common result of this form of trophic disease. The disease usually appears at, or near the time of the onset of other ataxic symptoms. The knee and ankle are most commonly involved but any joint in the body may be effected. The deformities resulting in the so-called genu recurvatum, "pied tabétique" and a spinal deformity that may resemble spondylitis deformans. Syringomyelia also is complicated by joint dystrophies. The attacks are usually acute and painful. The upper limbs are more commonly involved and it is associated with those other symptoms that are characteristic of the disease. Muscular atrophy and loss of pain and heat sense, but retention of tactile and muscular sense. Atrophic and hypertrophic changes occur in the joints varying from complete destruction of bone ends to marked enlargement and ossification of the capsule and synovial membrane. The duration of the disease requires a longer time for its development than the dystrophies accompanying tabes.

Treatment.—The consideration of treatment for any and all of these conditions, at first sight would seem a matter of hopeless prospect, yet the last few years have shown so many advances in our knowledge of the diseases themselves that we are now able to offer much more than symptomatic suggestions. Locke and Osgood summaries the treatment as follows:

1. The treatment of such conditions as primarily or secondarily affects the condition of the joints.

2. The special treatment demanded by the different types of disease. Under the first class is included the general treatment that can be applied to all cases correcting any disturbances of the general bodily health such as anemia, malnutrition, nervous debility, obesity, chronic constipation, etc. Infective foci must be eliminated. Deformities should be corrected and organic disease of the vis-

cera consistently looked after. The diet should be nutritious and should include copious water drinking to favor the elimination of waste and toxic products. Hydrotherapy, artificial hyperemia, massage with active and passive motion are the measures that we can expect to be most efficient, and have displaced former drug methods.

Rest is absolutely necessary in all cases, but care must be used since too much rest induces muscular atrophy and adhesions in certain forms of joint diseases. Climatic influence is certainly to be considered an important measure, but unfortunately the average patient is unable to change his residence to suit his ills. Drugs are of use in relieving symptomatic demands. The salicylates are contraindicated, their continued use produces cardiac depression and gastro-intestinal irritation. Iron, arsenic and the iodides may prove of use as tonic alteratives, but until a specific is discovered there is no drug that is demanded or that offers us anything more than symptomatic relief.

ESOPHAGEAL CARCINOMA,*

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The esophagus is rarely the seat of carcinoma, Walshe¹ found that of 8,298 deaths from malignant disease only 13 were due to cancer of the esophagus.

Here as elsewhere in the alimentary canal, we find histologically those tissues in which the disease is prone to occur. The structure is often subjected to sufficient irritation to serve as an exciting cause. Heredity and age seem to play about the same part here as in cancer of other organs. It is more frequently found in males than in females; thus Morell Mackenzie² collected one hundred cases and found it occurring seventy-one times in men. It usually makes its appearance after the fortieth year. Generally it is primary, but may be secondary to cancer of the tongue, pharynx, mediastinum, or stomach.

Carcinoma may involve any portion of the esophagus from its beginning to its termination. Post-mortem examinations, however, do not show that the disease has a predilection for any particular region, although Butlin³ claims that the central portion of the canal is the least often affected.

Anatomically we find that the mucous membrane lining the esophagus is of the squamous variety, and

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consequently the form which cancer usually takes when it involves this structure is of the flat or surface squamous celled epithelioma. Of fifty-seven cases collected by Butlin⁴ fifty-three were epitheliomatous, two were scirrhus, one was encephaloid, and one was colloid.

The disease usually begins in the deeper layers of the mucous membrane. It may originate as a benign papilloma, when, at a later period we find that the epithelial cells have broken through the membrana propria and proliferate in the surrounding tissues; or it may take its origin as a small deep-seated nodule. By some pathologists it is believed that a similar origin for the growth may be found here as in cancer of the stomach—namely in the scar of a healed ulcer, in which as a result of continued irritation, the malignant process may take place. As it grows it tends to encircle the esophagus for a length of one or more inches. It may remain as a flat infiltration with superficial ulceration, or it may project inwards in large fungous masses, greatly reducing the caliber of the tube.

Coincident with the growth of the carcinomatous tumor we find sooner or later the processes of destruction and contraction taking place. The surface at about the center of the growth soon ulcerates, either as a superficial necrosis or deeply as the separation of sloughs. The presence of the growth soon causes a development of fibrous tissue which takes place around and within the tumor; this fibrous tissue subsequently contracts and the lumen of the tube is diminished. Extension of the growth may take place by contiguity of tissue and thus we may have involvement with perforation of neighboring structures, as the lungs, bronchi, pleuras, pericardium, and large bloodvessels. Posteriorly we may have erosion of the vertebræ and involvement of the spinal cord. Metastases may be found in the liver, kidneys, spleen, small intestines, mesenteric glands, bones, and other organs and tissues. The post-mediastinal glands and the deep cervical glands are those usually involved. If the growth involves the lower portion of the tube there is usually a dilatation of that portion of the esophagus above the area of stenosis.

Carcinoma here as in other parts of the body presents its one marked symptom—the progressive emaciation. Sooner or later we have symptoms referable to the location of the growth which are caused by the increasing stenosis. Dysphagia becomes a prominent symptom; it gradually and steadily increases, from only a slight difficulty being experienced in swallowing solid and semi-

solid foods until liquids alone can be taken, and finally even liquids are regurgitated. The regurgitated contents may contain in addition to the food swallowed, blood, mucous, and portions of the cancerous growth. Pain may be a prominent symptom, and if so it is usually of a paroxysmal character.

In some cases the patient can locate very accurately the seat of obstruction. It not infrequently happens that when the obstruction is at its height, a sudden and marked improvement takes place; this, however, is only temporary, and is due to the accidental removal of a portion of the growth, which renders the canal more permeable for a time. The breath becomes very offensive, due in some cases to the gastric disturbances, and in others to ulceration and sloughing at the seat of the disease. Dryness of the tongue and the fauces, with troublesome thirst are distressing symptoms. The bowels are usually constipated.

In some cases the symptoms of metastatic growths may overshadow those of the original tumor.

The duration of the disease is seldom over one and a half years. In the soft medullary variety the duration is much shorter.

Among the various complications which may occur are the following: Hemorrhage may result from ulceration into the aorta or its branches. Collapse of the lung from perforation of the pleural cavity with subsequent development of an empyema. If the air-vesicles are perforated, a pneumonic process and gangrene ensues. An involvement of the vertebræ will subsequently cause pressure on the cord and paraplegia result. Pressure on the recurrent laryngeal nerve will result in paralysis of the vocal cords.

The diagnosis of cancer of the esophagus is usually easy, in some cases, however, it is very difficult. The dysphagia is the prominent symptom and the one for which the patient seeks relief. It is essential then, that we find the cause for the obstruction, be it within or without the canal. An esophageal bougie is then passed gently down the esophagus until the obstruction is met. The distance from the bulbous extremity to the teeth is marked on the shank of the instrument and when withdrawn it is measured. Should the bougie be covered with blood and mucous, it is well to subject the material to a microscopical examination in order to determine the presence of epithelial cells suggestive of malignancy. If the cause be without the canal and the case is not an advanced one, gentle pressure for a few minutes will allow the bougie to be pushed into the stomach. Aneurysm of the aorta, pharyn-

geal tumor, tumor in the posterior mediastinum, malignant disease or abscess of the vertebræ are some of the causes which may produce obstructions from without. Among the intrinsic causes are strictures from traumatism, syphilis, chronic ulcer, chronic esophagitis, paralysis, and simple dilatation.

In the case of obstruction due to traumatism or syphilis, the previous history of the case in each instance will assist in the differentiation. If the stricture is due to single ulcer, there will usually be a history of previous hemorrhages occurring at a time too distant for the actual onset of a cancer. In the case of paralysis the dysphagia can be overcome by the passage of an esophageal bougie. In chronic esophagitis the progress of the disease will help us to differentiate it from cancer. An examination with the esophagoscope will prove a valuable adjunct in clearing up the diagnosis.

The treatment of cancer of the esophagus resolves itself in the conducting of such measures as will insure the prolongation of life and the relief of suffering.

In the early stage of the disease the treatment will consist in the selection of such articles of food which are free from irritation and of a highly nutritious value. The gentle passage of soft esophageal bougies at regular intervals will prove advantageous in preventing the early presence of stricture.

When the patient reaches that stage when only liquid food can be swallowed then the question of operative interference comes up for consideration.

The first operative measure to be thought of is the tube feeding. Morell Mackenzie⁵ was in all probability the first to introduce the tube feeding; but we must credit Symonds⁶ for the marked advances made in this form of treatment. The idea involved in the tube feeding was the gradual dilatation of the stricture by the insertion at stated intervals of soft rubber tubes of increasing caliber. Two kinds of tubes were used; the long tube extended from the nose through the esophagus and into the stomach, while the short tube only extended for a short distance on each side of the strictured area. To one end of the short tube was inserted a piece of silk thread which, after the insertion of the tube was tied about the ear of the patient, the other end was closed but near it and on one side was the opening for the food to pass through. The tube was inserted by means of an introducer through the strictured area and allowed to remain for about ten days when it was removed

by pulling upon the silk thread; then a tube of larger caliber was inserted.

The danger in connection with the use of these tubes lies in the possibility of their becoming disconnected from the silk thread. When that occurred the attempt was made to push it into the stomach with the hope that it may pass through the gastro-intestinal tract which it rarely did. One of the objectionable features of the Symonds's tubes and of Gersuny's method of permanent tubage as well is the marked irritation caused by the pressure exerted from these tubes, which, if continued, results in ulceration of the mucous membrane. It is probably this objectionable feature that has done more to condemn this form of treatment with some surgeons who favor other operative procedures.

In those cases where the carcinoma lies sufficiently high two operative measures present themselves for consideration. Since the radical treatment of malignant diseases involving this structure by esophagectomy has not proven as successful as is attendant when such disease is found in other and more accessible structures, the palliation with external esophagostomy will be more often indicated.

When the disease is found to involve the middle or lower thirds of the esophagus, the operation of election is gastrostomy. The method as suggested by E. J. Senn giving the best results with the least danger of leakage.

In concluding I wish to give you the history of the case of carcinoma of the esophagus which I presented at a recent meeting.

Mr. B. L., age 67, was admitted to Grace Hospital on May 27th, of the current year, with the following history: Until October of last year he had always enjoyed good health. His present trouble commenced with attacks of severe pain in the posterior part of the chest, this pain was of a paroxysmal character and at times would shoot forwards to just beneath the sternum. The attacks of pain usually came on shortly after he began to eat and would last from one-half to two hours. He obtained treatment for the condition both here and elsewhere, but the results were not satisfactory. In February of the present year he noticed that in addition to the pain solids were swallowed with difficulty. As the dysphagia increased he sought treatment in the hospital with the result that he obtained some relief. From October to May of the current year he lost thirty-four pounds in weight.

After his admission to the hospital an attempt was made to pass the smallest size esophageal bougie, but it met with an obstruction at a distance of 14 inches from the incisor teeth; on gentle pressure, however, it was made to slip by the obstruction and reach the stomach. Upon withdrawing the

bougie it was found covered with mucous and blood, which was examined under the microscope to determine the presence of epithelial cells suggestive of malignancy. As the patient regurgitated all semi-solid and liquid food, an examination of gastric contents following a test breakfast was not made. Upon completing the examination a diagnosis of carcinoma of the lower third of the esophagus was made.

After a few weeks of treatment with bougies of increasing size he left the hospital feeling well satisfied, since he was able to eat semi-solid food. From time to time he returned to have the bougies passed, but only at such times as he found that he could not even swallow liquids.

When he returned for treatment last month we believed that he had reached the stage when a gastrostomy should be made, and he re-entered the hospital for this purpose a few days later.

As his physical condition was bad, owing to the deprivation of fluids, he was given high enemas of normal salt solution; twelve pints of which were retained in the forty-eight hours previous to operation. Two months ago to-day a gastrostomy was performed, using the method devised by E. J. Senn. It was an interesting fact to note that upon opening the peritoneal cavity, a marked atrophy of the stomach was found to exist and the organ itself was located deeply in the posterior part of the stomach fossa.

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AN IMPORTANT STEP IN WHITMAN'S REDUCTION OF FRACTURE OF THE NECK OF THE FEMUR.

In the abduction method of treatment, the anatomical structure of the joint has been utilized to reduce deformity with the same definiteness as in the manipulative reduction of dislocation of the hip. But although it has been often described, its purpose and the manner of its application are constantly misapprehended by those who have not seen it demonstrated. . . .

If the fracture is complete *the limb must be drawn downward until the shortening has been overcome* before abducting it. For if abduction is made before the shortening is reduced, the trochanter impinging on the ilium, would serve as a fulcrum to separate the fragments. Whereas, when properly applied, it will appose them, unless it is carried beyond the normal limit. This is, however, most unlikely, because of the resistance offered by the muscles and by the capsule.—ROYAL WHITMAN in the *N. Y. State Journal of Medicine*.

COLLES' FRACTURE.*

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One of the most important fractures with which the surgeon, and indeed the general practitioner has to do, is Colles' fracture,—first, because of its frequency; second, because of the deformities which so often follow, and which are so conspicuous. These deformities are ever before the public, advertising the physician in a way that he does not wish.

No one can be a good surgeon without first becoming a good anatomist. One may as well try to repair an automobile without a knowledge of the mechanism of the machinery as to undertake surgery without a knowledge, at least, of the surgical anatomy of the part or parts of the body he essays to treat. Without this knowledge the machinist and the surgeon will be a dismal failure; the latter more than the former, because the first deals with dead matter, the second with vital tissue. 'The first essential then in diagnosing and treating Colles' fracture is a thorough knowledge of the surgical anatomy of the wrist. It is not necessary to know the anatomy in detail, *e.g.*, one can diagnose and treat Colles' fracture perfectly, without knowing the attachments of the extensor longus pollicis, although these minor details are desirable.

The physician must know that the radius articulates with the scaphoid and semilunar bones, and that the ulna does not, *per se*, enter into the wrist joint except through the intervention of the triangular fibro-cartilage. It is essential to know that the radio-ulnar articulation is formed by the head of the ulna fitting into the sigmoid cavity of the radius, and the bones are held in juxtaposition by small transverse ligaments, together with the triangular fibro-cartilage. This little cartilage is one of the most important structures in the wrist joint. It is attached by its base to the osseous border of the radius formed by the sigmoid cavity, and the articular surface of this bone, and by its apex to the base of the external surface of the styloid process of the ulna. The lower end of the radius is thick and widened by the large styloid process, and is composed of a mass of spongy tissue and a thin layer of cancellous tissue. The anterior lip of the radius projects prominently to the front. The posterior lip is on a plane with the posterior surface. The flexor and extensor tendons of the hand and digits pass over the wrist anteriorly and posteriorly respectively, but no muscles are inserted into any of

* Read before the Western Surgical and Gynecological Association, December 29, 1908.

the bony prominences about the wrist that materially influence the reposition of the parts concerned in Colles' fracture, or the deformity which may follow. The question of muscular contraction or tension does not enter into the fracture.

The prominent external landmarks are the styloid processes (radius and ulna), the head of the ulna, the anterior lip of the lower end of the radius, and the thenar and hypothenar eminences.

In the normal wrist the styloid process of the radius is on a somewhat lower plane than the corresponding process of the ulna. The base of the thenar eminence is lower (*i. e.*, nearer the hand) than the hypothenar.

The head of the ulna is prominent posteriorly while the anterior lip of the radius can easily be palpated anteriorly. I should like to take all the above enumerated anatomical points seriatim, and demonstrate the value of a knowledge of these both in the diagnosis and treatment of Colles' fracture, but the scope of this paper will not permit.

The cause of Colles' fracture, probably in 90 per cent. of the cases, is a forward fall striking forcibly upon the palm of the hand. The mechanism of the fracture of the lower end of the radius, in consequence, is exceedingly interesting. The anterior ligament is first made extremely taut. If the force of the fall is not yet spent either the ligament must give way, the carpal bones break, or the lower end of the radius fracture. The anterior ligament is attached to the anterior projecting lip of the radius above and to the anterior surface of the cuneiform below, principally, so that we have the principle of a lever applied with the power at the cuneiform; the fulcrum at the scaphoid and semilunar and the weight at the anterior lip of the radius. The most usual lesion, therefore, is a cross fracture of the lower end of the radius; this is Colles' fracture. In addition, to the cross breaking strain is a vertical force due to the impact of the hand upon the ground, to which and through the arm is transmitted the weight of the body. The effect of this vertical force is to carry backward and upward the lower fragment of the radius, and if this vertical force is not yet spent, the sharp posterior border of the upper fragment is impaled into the spongy lower fragment. Let it be remembered that the triangular fibro-cartilage is attached by its base to the lower margin of the sigmoid cavity of the radius, and by its apex to the base of the external surface of the styloid of the ulna. In consequence of the traumatism above described the cartilage is torn off from one or the other, or both of its attachments. The radio-ulnar ligaments (not necessarily the inter-

osseus) are either strained or ruptured and the head of the ulna is forced to the front. Then we have a picture of the lower fragment of the radius in a posterior position impinging upon and pushing the extensor tendons and overlying tissues backward, and the head of the ulna and lower end of the upper fragment of the radius crowding the flexor tendons, and the tissues overlying them forward. These changed positions produce a characteristic deformity known as the "silver fork" deformity. The soft tissues about the wrist joint coincident with the bone lesions above described are lacerated, the ligaments are stretched or torn, sometimes the tendon sheaths are lacerated and blood is extravasated into the synovial sac, and thus we have a picture of a very serious injury.

Diagnosis.—In Colles' fracture the base of the thenar eminence is higher (that is, nearer the wrist) than normal, and the slope from this eminence is more abrupt. The head of the ulna which is usually so prominent posteriorly disappears from behind and appears in front. The styloid of the radius is on a plane as high as, and often higher than, that of the ulna. The wrist is broadened because of the rupture of the inferior radio-ulnar ligaments, and separation of the triangular fibro-cartilage from one or the other of its attachments. The lower end of the upper fragment projects forward causing a protuberance anteriorly; the lower fragment is thrust backward causing a bulging posteriorly. These abnormal positions and conditions are sufficient for a diagnosis, and except in a very fleshy arm can be determined by inspection supplemented by gentle palpation. Another form of Colles' fracture, the "reversed Colles," in which the lower fragment is dislocated forward I shall not describe in this essay. Suffice it to say this form of fracture is very rare. When the surgeon is called to attend a fracture, as a rule one of the first things he thinks of, and one of the first things he does is to determine whether or not crepitus exists, as though this one symptom overshadowed everything else. This is one of the most unreliable symptoms in Colles' fracture, for it is absent more times than it is present. The same is true of abnormal mobility. As a rule, therefore, anesthesia is not necessary for diagnostic purposes in Colles' fracture.

I cannot leave the subject of diagnosis without strongly advising the use of the *x*-ray as a supplementary means to a clean-cut, accurate diagnosis.

Treatment.—Of course, the first step toward successful treatment is complete reduction of the parts to their normal position. This cannot be done without an anesthetic. The writer believes that this

should always be given, and if the diagnosis is not clear it can be cleared up at this time. Rough unsystematized handling will still further injure the already injured parts, and is unsurgical and unscientific.

The books usually describe the manner of taking hold of the parts for the purpose of reduction; this is confusing to the tyro and useless for the adept. The surgeon must know his anatomy and determine accurately the character and extent of the injury, then restoration under an anesthetic will come easy without fixed rules. Upon the following, however, will hinge the success or failure of the treatment. The lower fragment of the radius is partially or wholly displaced, and this must be brought back to its normal position end-to-end with the upper fragment. Because of the rupture of the inferior radio-ulnar ligaments, the bones separate and the wrist "spreads." The bones must be brought back into juxtaposition so that the head of the ulna will rest in the sigmoid of the radius. The head of the ulna is displaced forward and loses its posterior prominence, and this must be placed backward in its normal position and there retained. Lack of attention to any one of these conditions will cause permanent deformity. To think that a Colles' fracture is set when the lower fragment of the radius is brought back into position is a mistake that has brought sorrow to many a surgeon after union takes place. The most frequent permanent deformity is the slumping forward of the ulna, and the next most frequent is the so-called "spreading" or widening of the wrist.

It sometimes happens that the force of the falling body transmitted to the wrist is so great that the lower fragment is pressed out of shape (it is largely spongy tissue) so that it is made wider from side to side, and broader from before backward, and this compression is not equal in all parts of the fragment. For this reason the articular surface is made to fall in an abnormal direction. The widening and broadening and the changed articular surface are deformities, and always will be permanent; they are irremediable.

I wish to call attention to one other point in reducing this fracture. It frequently happens that the cross break of the radius is incomplete posteriorly, *i. e.*, periosteum is left intact. If one tries to reduce the fracture by extension and forward pressure he will only lock the lower fragment against the upper without reducing it, and the stronger the extension the firmer will the locking be. It is clear to every intelligent physician that the remedy here is to increase the backward flexion while extension is being made.

Whatever may be the character or extent of a Colles' fracture, and no matter how poorly reduced, healing takes place very rapidly the bones will be united in three weeks. When the fracture is once well reduced there is very little tendency to recurrence and the parts are easily held in position by some simple dressing. Whatever form of dressing is selected the forearm should be in a semi-prone position, and placed in a cravat sling which should not extend below the head of the ulna. No dressing should include the fingers. Some surgeons are content with a simple firm bandage about the wrist after the parts are put well in position; others use a posterior splint only; others an anterior splint.

For several years past the writer has used both the anterior and posterior splints extending from a little below the elbow to the knuckles. These have been well padded with sheet wadding, firmly though not tightly pressed together, a pad placed against the lower fragment of the radius behind and against the head of the ulna in front and to the inner side; strips of adhesive plaster are used to hold the splints in position, and these are further secured by a roller bandage. My results have been good. I should be afraid to risk the simple bandage. Although the posterior split dressing would be in most cases satisfactory, my objection to it is that one cannot so well prevent anterior slumping of the head of the ulna. I do not use a plaster of Paris dressing for Colles' fracture at all.

After-Treatment.—Many good surgeons recommend early passive motion. I do not believe that passive motion does a great deal of good; I am sure it can do much harm. It keeps the joint irritated and inflamed, increases the amount of callus and causes the patient useless suffering. Early active motion, *i. e.*, as soon as good union has taken place will lead to a perfect functional result. Early massage, if gentle, is not only permissible but to be recommended.

FOREIGN BODIES IN THE NOSE AS A CAUSE OF HEADACHE.

Rhinoliths and foreign bodies cause headache either by pressure or by a continual irritation of the parts. A rhinolith may exist in the nose for many years without headache or other unpleasant symptoms, but a foreign body as a rule in a comparatively short time will make itself known either by a pressure headache or by setting up a purulent rhinitis which may extend into one or more of the sinuses and so cause the headache.—ARTHUR I. WEIL in the *New Orleans Medical and Surgical Journal*.

THE INDICATIONS FOR OBLITERATIVE IN CONTRADISTINCTION TO RECON- STRUCTIVE ENDO-ANEURIS-

MORRHAPHY.*

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A consideration of the surgery of aneurism and especially of the various procedures of Matas, who has done so much to stimulate interest and activity in this particular field, leads to a discussion of the advantages or merits which one method enjoys above another and, as deductions, to certain well-marked contraindications which a further report of cases and our own experience seem to corroborate. It is quite certain that those would be operations of choice, which in a plastic manner restored the blood stream, practically, to its former course, and thus reestablished a normal peripheral blood supply without endangering either nourishment or function of distal parts.

Matas' procedure, which in theory and frequently in practice, accomplishes this end, is his operation of restorative or reconstructive endo-aneurismorrhaphy. It goes without saying that the more important the artery, or the more central the situation of the aneurism, the greater is the desirability and necessity of a method to restore the blood stream to its integrity, as is attempted by the restorative or reconstructive operation. But, in the face of this ideal procedure and of a number of brilliant accomplishments in this line, further clinical experimentation shows that there are often grave obstacles to its success.

We find that the vast majority of contraindications to the ideal procedure reside in the morphology of the sac itself, and are not revealed until the operator is face to face with its interior, stripped of clots and fibrinous deposits. From a surgical viewpoint, the simplest form of aneurism is one of the saccular type, occupying a position, as it were, of a lateral outgrowth from the main arterial trunk, and within which sac the orifice of communication with the artery is small and which from its nature does not, except from pressure or inflammatory deposits, encroach upon the blood stream. Here a simple plastic suture of the orifice plus the closure, if any, of minor arterial openings within the sac and the obliteration of the aneurismal cavity by buried sutures or perhaps the infolding of skin flaps, or the use of gauze packs,

etc., according to the methods of Matas, appeals to one most strongly.

CASE I.—The following case illustrates the type of aneurism just described, but the method of operating differs somewhat from the Matas restorative operation. This was a ruptured sacciform aneurism of the femoral artery, situated at about the junction of the upper and middle third of the vessel. A localized area over the surface of the tumor mass was ulcerated and bleeding when this patient entered the hospital. There were several hemostats attached to the substance of the mass to arrest hemorrhage.

Operation, October 11, 1905: Blunt dissection into the tumor showed it to be a sacciform aneurism with a very small opening into the main vessel. The sac, though slightly adherent to surrounding tissues, was freed and ligated flush with the main artery. This approximated the coats of the aneurism at its neck and obliterated the opening. The sac was snipped by scissors and the wound dressed. The post-operative history was uneventful, the patient leaving the hospital on the eleventh day, with no symptoms of his trouble.

Leaving now this simplest category of cases, which may unfortunately be but a small proportion of the whole number, our next phase in simplicity of intrasaccular conditions is one in which the main orifices of inlet and outlet are separated by a variable interval with perhaps the old stream bed still traceable connecting them. Here with a smooth, healthy serosa in this inter-orificial area, with pliable, comparatively healthy walls to enter into the formation of the new artery, with no collateral orifices requiring sutures to complicate the field; with all these conditions most favorable, reconstructive suture over a rubber tube or guide has, in a fair number of cases, shown itself quite feasible. Unfortunately, all these desirable factors may not be present; conformation may favor, but the wall may be stiff, brittle and not available for plastic work, or the serosa may be so defective that with the further insult of sutures and manipulations the operation would fail in its immediate design and become, in fact, an obliterative procedure by the formation of a thrombus at the operative site.

Not to discuss the various shapes and conditions within the sac which oppose the ideal procedure, further than these few suggestions indicate, we believe that in the vast majority of cases the radical obliterative endo-aneurismorrhaphy is the operation to be preferred for the following reasons:

1. The procedure is definite, thorough and radical.
2. No plastic work in diseased tissue is required, such work being notoriously uncertain.

* Read before the Western Surgical and Gynecological Association, December 29-30, 1908.

3. In a majority of cases the sac configuration and intrasaccular conditions will preclude plastic work.

4. In reported cases where apparently either method might have been employed equally well, the obliterative method has been more satisfactory, and shown greater freedom from untoward sequelæ, such as recurrence, hemorrhage, thrombosis, gangrene, etc.

5. An aneurism (pathologic) is a malignant degeneration in a vital structure. The diseased vessel can no longer be depended upon and deserves obliteration.

Our second case was that of a large popliteal aneurism of nine months' duration.

Operation, November 20, 1906. The operative field was made bloodless by an Esmarch bandage. A longitudinal incision extending beyond the tumor above and below the aneurism gave free access to the sac. Without further destroying the external relationship of the sac, the tumor was incised throughout its full length, blood clots and fibrin removed, and the interior cleansed and dried. The proximal and distal openings of the artery were found at the bottom of the sac, about two inches apart.

After a careful study of available tissue, a reconstruction of the artery was attempted, suturing with No. 0 iodized catgut over a No. 14 F. catheter as a guide, the cavity being obliterated by buried sutures. Upon removing the tourniquet, the vessel below the tumor could be distinctly felt and seen pulsating, showing that the artery was in fact reconstructed.

The subsequent history of this case was almost uneventful. The limb was restored in function. The man is certainly well and has resumed his work as drayman. There is no proof that the patency of the artery was permanent. We have never been able to detect a tibial pulse.

Our third case was also a popliteal aneurism. The patient was able to get about only with the help of crutch and cane. A large pulsating tumor occupied the right popliteal space. The leg was swollen and no pulse could be felt. In this case, as in the one just reported, the field of operation was made bloodless by the use of an Esmarch bandage at the upper part of thigh. A skin incision of sufficient length exposed both the upper and lower part of the aneurism; the sac was emptied of clots and fibrin. The interior of the sac was rough and corrugated and showed two arterial openings besides those of the parent artery. The walls were so friable and the endothelium between the openings of the parent artery so uninviting, that an attempt to reconstruct the artery was abandoned. All arterial orifices were closed by intrasaccular sutures and the sac obliterated by tiers of buried catgut sutures, according to Matas' method. The wound was closed with drainage, the drain being removed on the second day. This patient left the hospital

on the tenth day, and was soon at work as a Pullman porter.

The technic of intra-aneurismal surgery resolves itself into several distinct essential steps:

1. Preliminary hemostasis. To accomplish this is more or less difficult, according to the situation of the aneurism. Esmarch's compression of the main artery above, and temporary, direct compression above and below are variously used. A bloodless field is almost a *sine qua non*.

2. Free opening of the aneurismal sac, to permit a careful survey of the interior, before deciding the plan of procedure.

3. Intrasaccular suture of orifices.

4. Obliteration of cavity by sutures.

5. Closure and drainage.

The after-treatment of these cases is usually simple, only one or two points being worthy of comment. The member or part operated upon is best immobilized by some suitable fixed dressing in a position of relaxation. This prevents tension on the vessel wall longitudinally, and also allows free play for the establishment of a collateral circulation.

Drainage should be discontinued early, as soon as its purpose is served.

SARCOMA OF THE BREAST.

Sarcoma constitutes from seven to nine per cent. of all tumors of the breast. It may occur at any time of life. They may remain small for years and suddenly increase in size, and when small it is impossible to differentiate them from fibro-adenoma, cysts, or carcinoma. When large the over-lying skin becomes tense, thinned, and reddened, and may ulcerate. The veins become much enlarged; the nipple, however, is rarely retracted, and the axillary glands much less frequently involved than in carcinoma. Soft sarcomata are more prone to return after operation.—S. E. MAYNARD in the *Vermont Medical Monthly*.

THE VALUE OF A REMNANT OF OVARIAN TISSUE.

Any operation which involves the removal of all of both ovaries during the period of sexual activity must not be viewed lightly from a moral, social or physical viewpoint.

The least portion of ovarian tissue is worth saving, even though all else of the genital organs be sacrificed. Repeatedly I have been surprised and gratified at the persistence of the menstrual function and the avoidance of the nerve storms, which mark the artificial change of life, when an apparently insignificant bit of ovarian tissue has been left.—PALMER FINDLEY in *The Medical Era*.

A PARAFFINED MESH FOR RETAINING SKIN GRAFTS.

RALPH ST. J. PERRY, M.D.,
FARMINGTON, MINN.

The publication by John Staige Davis, of Baltimore, of his method for retaining skin grafts *in situ* by means of a coarse netting impregnated with gutta-percha (*Annals of Surgery*, March, 1909), and its description in an editorial in the AMERICAN JOURNAL OF SURGERY, May, 1909, prompt me to report that for nearly fifteen years I have been using a somewhat similar method, which I believe to be much simpler of preparation and more accessible to the general practitioner.

Years ago, when using small "snipped" grafts, averaging in size about one-quarter inch in diameter, this problem presented of keeping the grafts *in situ* upon the granulating surface instead of having them come away adherent to the discarded dressings. After many trials (and tribulations), the desired end was attained by covering the grafted surface with a coarse netting or veiling, which had been sterilized and saturated with iodoform paraffine.

The original method of preparation was as follows: Silk netting with a mesh of not more than one-quarter inch, nor smaller than one-eighth inch, was boiled in plain water for half an hour to remove the gum, starch or other stiffening substance; then rinsed thoroughly in plain sterile water; next boiled in 1-5000 bichloride of mercury solution for half an hour; dried in the oven for about five minutes at a not too high temperature; and finally saturated with the paraffine solution and dried in the open air. During all this preparation the netting was spread upon and fastened to wire frames about 6 by 6 inches. The paraffine solution was made by dissolving sterilized or boiled paraffine in absolutely clean redistilled gasoline. This solution could be medicated by adding iodoform, aristol or any other suitable antiseptic soluble in gasoline.

Of late years I have substituted cyanide of mercury for the corrosive sublimate because the latter damaged the granulations and, incidentally, it attacked the wire frames and caused a deterioration in the quality of the finished nettings. Also I have used resublimed iodine in place of iodoform or other antiseptic for medicating the netting. The paraffine solution rapidly permeates the fibers of the netting and when the gasoline evaporates it leaves a soft, flexible, non-absorbent, non-adhering, antiseptic retention-dressing material, through which wound secretions readily pass, over which gauze, cotton or

other absorbent dressings may be applied without fear of their pulling off the partially adherent grafts, and which is sufficiently open-meshed to permit of free inspection and cleansing of the wound surface.

Several pieces of the netting may be prepared at the same time and can be kept for future use by laying them away between sheets of sterile paper which are kept moist with a solution of cyanide of mercury. Immediately prior to being applied to the granulating surface the netting can be washed in sterile normal salt solution.

The materials used in preparing this form of retention dressing are such as can be obtained in any country village store and the method of preparation is so simple that the veriest tyro in technic can carry it out.

DUODENAL AND GASTRIC ULCERS.

Duodenal and gastric ulcers have so many points in common that there are really no characteristics by which they can be differentiated; and very often a differential diagnosis is immaterial, so long as an ulcer is recognized. Latent duodenal ulcer gives rise to little or no pain, has no typical symptoms and is generally unrecognized until suddenly there is a hemorrhage, which is liable to be severe, and blood is vomited from the stomach and passed from the bowels. This blood may be unchanged or greatly altered by the action of gastric and intestinal juices. That passed from the bowels may have a tar-like consistency. Severe hemorrhage occurs in about one-third of the cases. Before there is a hemorrhage, the appetite and stools are generally normal; dyspeptic symptoms are rare and there may be diarrhea, although constipation is the rule. Vomiting is rare and, barring the blood, is not characteristic. There may be an increased, a decreased or an absence of hydrochloric acid. In gastric ulcer pain is supposed to be relieved by vomiting; while in duodenal ulcer there is no relief from vomiting and it is claimed by some that in duodenal ulcer the pain comes on later, say four or six hours after eating, and that it is situated further to the right; but none of these points are by any means reliable. In pyloric ulcer there are pain, gas, acidity and the vomiting is more intense; while in duodenal ulcer the pain, gas, acidity and vomiting are not so well marked and the pain resembles more that of gall-stones. Icterus is an exaggerated symptom of duodenal ulcer, as it is rare and when present means some complication.—H. E. LOMAX, in *Albany Medical Annals*.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, JULY, 1909.

DIFFERENTIAL PRESSURE IN INTRA-THORACIC SURGERY.

One of the most interesting discussions at the recent meeting of the American Medical Association was that devoted to some of the aspects of intrathoracic surgery. It was made notable by the reading of a paper by Prof. Friedrich, of Marburg, from whose clinic, both by his own contributions to technic and by the negative-pressure cabinet of his assistant, Sauerbruch, the greatest recent advances in this department have come.

Clinical and especially experimental data were adduced by other speakers. Meltzer called attention to the fact that respiration may be made to continue in an animal without respiratory movement: by inserting a small glass tube into the trachea as far as the bifurcation a double column is provided for, respectively, the inspired and expired air. He also stated that, physiologically, there is a difference in the effects of "negative"—and "positive-pressure" apparatus. Whether there is a choice between these two modes of differential pressure, and what are their relative advantages, are yet to be determined. In connection with the report of his experiments in pneumectomy Willy Meyer briefly referred to modifications he has made in the differential pressure apparatus. Instead of glass cabinets he uses balloons of rubber sheeting stretched on collapsible wire frames—the rubber outside the screen in the negative pres-

sure, and inside in the positive pressure cabinets. By employing one cabinet within the other, he is able to combine both modes of differential pressure or to switch, at will, from one to the other. If it is ultimately learned that each mode has its indications, this combination will be most valuable. And until this problem is settled the combination of cabinets will help greatly towards its solution. For these reasons, and because of the lesser costliness and greater portability, Willy Meyer's cabinets would seem to be a modification of no little importance to the progress of intrathoracic surgery.—W. M. B.

VOLVULUS.

There are three important forms of intestinal obstruction: Mechanical obstruction, such as results from annular cancer of the bowel; the obstruction incidental to paralysis of the intestine, such as supervenes upon peritonitis, and mechanical obstruction plus strangulation in which the circulation of a part of the bowel is shut off, as occurs in strangulated hernia and in volvulus. These are three quite different conditions, each requiring different treatment, and all representing different pathologic changes.

Volvulus is a much more common condition than our literature would indicate. It is important because it first represents only mechanical obstruction, when it is the most easily curable of any of the forms of mechanical occlusion of the bowel. It may quickly become obstruction plus strangulation and gangrene, when for its cure resection of bowel becomes necessary. About seventy-five per cent. of the cases of volvulus involve the sigmoid flexure. Volvulus also occurs in cecum, small intestine, and in other parts of the colon.

The characteristic onset is sudden, and usually in a patient in good health. Pain is the first symptom; then come the other signs of obstruction. The pain is often severe, and the strong peristaltic effort can be seen through the abdominal wall. In few diseases does the patient's suffering plead more strongly for an injection of morphine; but in no disease can morphine do more harm. The surgeon is prone to go immediately at the trouble through the anterior abdominal incision as soon as the diagnosis is made; but it is noteworthy to observe that so experienced a surgeon as Waterhouse, of the Charing Cross Hospital, is a strong believer in the value of rectal enemata. (*British Medical Journal*, May 29, 1909.) He has seen many cases both of volvulus and of intussusception reduced by the use of repeated enemata, the patient being in the knee-chest posi-

tion. This position has succeeded when injections in the dorsal position have failed.

The unfortunate feature about volvulus of the sigmoid is that, if the pain is not severe, the gravity of the condition is often overlooked because of the absence of vomiting. All observers have noted that vomiting is apt to be a late manifestation in this condition. To defer operation because of the absence of this classic sign of intestinal obstruction is to deprive the patient of the chance of recovery.

If seen early the repeated enema should be tried. After the first twenty-four hours it is doubtful whether it is worth while. When this expedient does not succeed the bowel should be exposed. The object of the operation should be to save the patient's life. The twist should be relieved. It not seldom happens that this may be accomplished, in part or entirely, by enema, with a long tube, after the abdomen is open, when it failed beforehand. If the bowel is much distended it should be opened, its toxic contents washed out, and an artificial anus made or a tube left in the wound for later drainage and irrigation. When gangrene demands resection, it is better to end the operation with an artificial anus, to receive subsequent attention, than to perform a completed operation with anastomosis of the bowel at the cost of the patients' life.—J. P. W.

RENAL DECAPSULATION IN PUERPERAL ECLAMPSIA.

In the May number of the *Edinburgh Medical Journal* appear three articles dealing with the above theme. H. Oliphant Nicholson states that the three cardinal symptoms of eclampsia are contraction of all the arteries and arterioles of the body, enormously high blood pressure, and more or less suppression of urine. In spite of high blood tension the blood circulation in the kidneys is diminished, because of extreme vasocontraction particularly of the glomerular arterioles. The renal veins become congested chiefly from paralysis of their musculature and from the back-flow of the large veins of the abdomen. The logical treatment medically is drugs having a vasodilator action; surgically, decapsulation as suggested by Edebohl's, or, as the capsule in cases hitherto reported was not always tense, merely single or multiple incisions into the lower pole of the kidney in order to afford local depletion.

Sir J. Halliday Croom reports a case of post-partum eclampsia in which the convulsions began eight hours after labor and recurred fourteen times in twelve hours. The patient was in extremis, all medical measures having failed, when renal decap-

sulation was finally performed and slow recovery supervened.

R. C. Buist records three cases, the first dealing with a patient who had absolute anuria and was not benefited by decapsulation. The second, who apparently was an epileptic, recovered, but hardly seems a convincing evidence of the efficacy of this method of treatment. The third had no symptoms of eclampsia, but rather those of toxemia due to extreme soprostasis. She also survived.

Croom's statistics show that of thirty-three cases operated upon for eclampsia, eighteen recovered. He concludes that the indication for decapsulation is not the total anuria but the clinical evidence that the unknown toxine has implicated the kidney more seriously than any other organ, and that the toxic change has not yet advanced too far.

Experimental evidence on animals has never sustained Edebohl's claim that decapsulation of the kidney improved or cured chronic nephritis. In eclampsia, however, the kidneys are often notoriously healthy before and after the occurrence of this disease. Therefore, the contention that the renal symptoms are chiefly due to mechanical (circulatory) changes, and consequently can be relieved by purely mechanical means (surgical depletion), seems more credible in the latter instance.

The German literature of the last few years (*Gauss, Poland, Haim, Opitz*, etc.) contains numerous reports on this method, and in the United States decapsulation has also received some trial.

Before placing too much confidence in any one method of treatment it is well to bear in mind that our present conception of eclampsia is as yet vague, and embraces several clinical groups, such as "eclampsia without convulsions" (Schmorl), toxemias with convulsions, and the more common type of eclampsia. The etiology of these groups is even more vague than their clinical manifestations, mechanical causes (ureter compression) specific and non-specific toxines (syncytiotoxines, Veit), placental emboli (Schmorl), placental enzymes and thyroid insufficiency, etc., etc., having been assigned as causative factors. Let us also not forget that in performing decapsulation of the kidney we are combating a general disease by treating and perhaps in some instances relieving, only a single symptom, and that therefore all our efforts must not be limited to such a purely local measure. Finally, should our patient recover, let us remember, that seemingly hopeless cases have regained perfect health when treated by the old routine medical methods, notably the patients of Jardine and of Engelmann in whom more than 200 convulsions occurred and recovery supervened.—R. T. F.

Surgical Suggestions.

Vomiting in an insane person should always prompt an examination for hernia.—W.

No scalp wound is too small to receive the most scrupulous aseptic attentions.—W.

In searching for signs of fracture of the base of the skull, post-auricular edema should be looked for.—W.

An enlargement of the thyroid beginning after middle life should arouse the suspicion of malignant neoplasm.—W.

A foreign body in a bronchus diminishes the respiratory murmur over the affected side. If the body occludes the bronchus, the respiratory murmur will be absent.—W.

In fractures of the trachea an immediate tracheotomy is indicated, as emphysema occurs if the mucous membrane is punctured, and the operation is then rendered much more difficult. The mucous membrane is injured in most cases.—W.

Cancer of the posterior part of the tongue invades the lymphatics not only on the side upon which the disease is located, but also upon the opposite side, because of the peculiar anatomy of the lymphatics of this region.—W.

In a child presenting symptoms of tuberculous disease of the cervical spine, it should be remembered that other conditions, such as torticollis, inflamed lymph nodes, and sprain of the cervical ligaments, are capable of giving similar symptoms.

Neuralgia is differentiated from neuritis by the fact that in the latter pressure upon the nerve increases the pain. The pain of neuritis is more constant, and there are peripheral disturbances in the structures supplied by the affected nerve.

During and after the healing of fractures of the shaft of the humerus, the forearm and hand should be examined for wrist-drop and other evidences of musculo-spiral paralysis.

Book Reviews.

Surgery; Its Principles and Practice. In five volumes.

Edited by W. B. COLEY, M.D., LL.D., HON. F. R. C. S., ENG. AND EDIN. Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. *Volume IV.* Large octavo; 1194 pages; 582 illustrations, 22 of them in colors. Philadelphia and London: W. B. SAUNDERS CO., 1909. Cloth, \$7.00 net; half morocco, \$8.00 net.

The contributions in this, the fourth volume of Keen's *Surgery*, are of uneven merit. The first article on *Hernia*, by W. B. Coley, affords an excellent survey of the subject and its value is decidedly enhanced by the fact that the author can call upon an exceedingly large personal material to enforce his statements. The only criticism that we can offer is the author's rather extreme bias against certain operations whose value has been amply attested by others. The next contribution, on *Diseases of the Rectum and Anus*, by Robert Abbe, is decidedly poor. It is written in a rambling style, the text is superficial and clinical aspects are inadequately discussed. The German spelling in the bibliography requires an almost complete revision. The article on *Examination of the Urine in Relation to Surgical Diseases*, by Edsall, is too discursive to be of much value to the surgeon.

Surgery of the Kidney, the Ureter and the Suprarenal Gland, by Ransohoff, is well written. In the discussion of the pathology of cystic kidney, however, the author shows that he is unacquainted with the most recent studies upon this subject. On page 240, the year 1889 should be 1899. The plates of kidney lesions included in this chapter are poor. The chapter on the *Surgery of the Bladder*, by Lewis, is excellent. Cabot's contribution on *Stone in the Bladder* is all that can be desired, although the advisability of devoting 35 pages, in a work of this character, to a not extraordinarily frequent malady, is questionable. The chapter on *Surgery of the Prostate*, by Hugh Young, is one of the best in this series. As we would expect, the advantages of perineal prostatectomy are set forth in rather strong terms. In *Surgery of the Penis and Urethra*, the author, Orville Harwitz, practically ignores the literature of the subject entirely, and the value of an otherwise very readable chapter is thus considerably diminished. The bibliography at the end of the chapter is of little value. Bevan's chapter on *Surgery of the Scrotum, Spermatic Cord and Seminal Vesicles* is fair. He describes his own operation for undescended testis and no other; chorio-epithelioma of the testis—a not uncommon form of tumor of this organ—is not mentioned. The diseases of the seminal vesicles are insufficiently discussed. The chapter on *Surgery of the Intestines*, by Weller Van Hook and A. B. Kanavel, is very disappointing. It is practically nothing but a rehash of various articles and not even of those that are most representative. Much space is wasted by interminable descriptions of cases; the exposition is unsatisfactory and is lacking in system and in proportion. Much carelessness is shown in the spelling of proper names; as instances, Lidman, on page 695 should be Libman; on page 700 Gilson should be Gibson, and Halstead on page 725 should be Halsted. In the description of intestinal operations mechanical methods are entirely ignored. Finally, the English in which this chapter is written requires extensive correction. The next contribution is *Surgery of the Appendix*, by John B. Murphy, but only one disease of this organ, Appendicitis, is discussed. On that disease, however, this chapter is a masterly presentation. *Surgery of the Ear and Eye*, by Dench and de Schweinitz, are entirely satisfactory sections. The chapters on *Military Surgery*, by Gen. O'Reilly and on *Naval Surgery* by McCaw are welcome innovations in works of this character. Written by the heads of their respective military departments, these chapters fully come up to expectations. It appears to us that the last contribution in this book, on *The Influence of Race, Sex and Age in Surgical Affections*, by Rodman, might better have been devoted to a more important surgical topic. A subject of such breadth cannot be adequately discussed in the 21 pages devoted to it.

On the whole, this volume reveals the defects of the multiple authorship plan of writing books more than any of the preceding volumes. The personal note is excessively dominant and there are many repetitions. As instances, thrombosis of the mesentery is discussed in chapter 62 of this volume and chapter 10 of the first volume; hernia of the bladder in chapters 53 and 57 and gunshot wounds of the intestine in chapters 62 and 66. Finally there is lacking a proper proportion in the space devoted to the various topics. The illustrations maintain the high standards of the previous volumes and the publisher's part leaves nothing to be desired.

Experimental Researches on Specific Therapeutics. By PROF. PAUL EHRLICH, M.D., D.Sc. Oxon., Director of the Königliches Institut für Experimentelle Therapie, Frankfurt. Duodecimo; 95 pages. New York: PAUL B. HOEBER, 1909. Price, \$1.00.

Those who are not already familiar with the work on immunity and specific therapy of Ehrlich and his collaborators and followers, will do well to read this reproduction of the two Harben lectures of the Royal Institute of Public Health delivered by Ehrlich in 1907.

Lectures on the Use of Massage and Early Movements in Recent Fractures and Other Common Surgical Injuries, Sprains and Their Consequences, Rigidity of the Spine, and the Management of Stiff Joints Generally. By SIR WILLIAM H. BENNETT, K.C.V.O., F.R.C.S., Consulting Surgeon to St. George's Hospital, etc. *Fourth Edition.* Octavo; 134 pages; 23 illustrations. London: LONGMANS, GREEN AND COMPANY, 1909.

Sir William Bennett's advocacy of massage in recent fractures was published in the *Lancet* in 1898, and his lectures expounding massage and early movement have been before the profession for the past decade. His paper on Sprains and Their Consequences appeared in the *British Medical Journal*, December 8, 1906, and was reviewed in an editorial in the AMERICAN JOURNAL OF SURGERY, February, 1907.

In this edition, a lecture on Sprains and one on Stiffness of the Spine replace the lecture on Derangements of the Knee-Joint which was in the third edition. The lecture on Massage and Early Movements in Fractures has undergone revision.

The adequate treatment of fractures, sprains and stiff joints is most important, and to those not already familiar with Bennett's practical contributions to these subjects we commend this reproduction of his lectures.

The Elements of Hygiene for Schools. Compiled by ISABEL McISAAC, late Superintendent of the Illinois Training School for Nurses. Duodecimo; 172 pages; 32 illustrations. New York: The MacMILLAN Co., 1909. Price, 60 cents.

As an elementary text-book of hygiene, the author has provided an interesting work. She has aimed to present the every-day hygiene which all students should know. The economic basis of hygiene, the large problems of municipal sanitation, the hygiene of occupation come in for discussions which are suggestive for students though possibly not of practical application by them at the present time. It is to be regretted that a cumbersome diction should offset attempts at simplicity of expression. Weird grammatical construction often leads to ambiguity and even unintentional inaccuracies.

In the chapter on Bacteria, the drawings give false impressions as to the size and appearance of organisms as viewed through the microscope. To speak of a "cubic inch of bouillon" is scarcely allowable.

The chapter on Food, including effects of cooking, represents a careful compilation. To refer to the ratio of nitrogen to carbon in foods, however, without any previous or later reference to the chemistry of foods supplies

an indigestible food for thought. The drawings illustrating the ratio of nutrients to non-nutrients in various foods lose most of their value because there is no indication as to whether the foods are represented as purchased or as ready to be eaten. To class horses among the carnivorous animals is certainly an error in proof-reading.

The handling of the question of alcohol as a food is sane and balanced. The absence of a tirade against tobacco is also a welcome evidence of a scientific discussion.

The chapter on Causes and Dissemination of Disease is up to date, and includes reference to opsonins. It can hardly be stated that overwork and underfeeding are common to many occupations *per se*, granting both to be important factors, indirectly, in causing disease. To speak of an irritating gas from iodine may be permitted, but what gas arises from ammonia or chlorine? There is a glaring inaccuracy in writing of "the peculiar type of mosquito which serves as the carrier of malaria and yellow fever." *Anopheles* and *stegomyia* are not the same.

The chapters on Personal Hygiene, Household Hygiene, and School Hygiene are thorough, though brief and almost too elementary. The chapter on Hygiene of Occupation is properly introduced despite the apology in the preface. Furthermore, the subject is well handled, following Harrington's classification of dangerous occupations. The economic discussion of low wages, hours of employment for women and employment of child labor is well taken and in its proper place in a book on hygiene. The closing chapter on Disinfection and Quarantine is excellent, practical and valuable for students who are to drop the subject with this book. For this class of students the book was written. It will serve the author's purpose and serve it well, if it is given the use it deserves in the schools.

Tono-Bungay. A Novel. By H. G. WELLS. New York: DUFFIELD & COMPANY, 1909.

We give space in these columns to this latest novel by Mr. Wells because the story of the rise and fall of the patent medicine which gives it its title will prove interesting and diverting to physicians.

In *Tono-Bungay* the central figure relates his discreditable career—his boyhood impressions; his provincial experience as his uncle's apprentice in an apothecary's shop; his scientific studies, which he abandoned to contract an unhappy marriage and to exploit, with his uncle, a fraudulent nostrum; his vulgar, illicit love affair leading to his divorce; the development, by uncle and nephew, of a vast fictitious wealth by dishonest finance growing from the success of *Tono-Bungay*; the bursting of the bubble; the "hero's" effort to redeem the lost fortunes by an unsuccessful attempt to bring to England a boatload of radium-rich "quap" which he steals from a tropical island; his murder of an innocent native of the island; the escape from the law of uncle and nephew in an airship of the latter's design; the uncle's death; and another sexual encounter, more romantic than the others, but not more convincing.

Throughout the novel—and this is evidently its purpose—is the portrayal of the democratic disarrangement England's social scheme is undergoing—the representation of the fermenting England of to-day, the "England as a feudal scheme overtaken by fatty degeneration and stupendous accidents of hypertrophy." Here and there, too, is just a vague hint of the author's socialism.

Tono-Bungay is good reading for these summer days, and it suggests some things worth thinking about.

Medical and Surgical Report of the Presbyterian Hospital in the City of New York. Volume VIII. December, 1908. Edited by JOHN S. THACHER, M.D., and GEORGE WOOLSEY, M.D.

This volume contains 24 papers, some of which are highly interesting; it is ample testimony to the excellent work done in this hospital.

Progress in Surgery.

A Résumé of Recent Literature.

Ureteral Fistulae as Sequelae of Pelvic Operations. J. A. SAMPSON, Albany. *Surgery, Gynecology & Obstetrics*, May, 1909.

Sampson's study embraces the conditions of the ureter under normal and pathological aspects. The ureter has a sheath formed by adjacent connective tissue. As this is adherent to the peritoneum, above the broad ligament, the ureter remains attached to this membrane. The sheath also serves to protect the ureter from the invasion of cancer cells. The blood supply is derived from numerous sources and the entire ureter may be freed from kidney to bladder without causing necrosis; conversely rough handling of even a small portion of the duct may be followed by necrosis.

The ureter has been injured in almost every conceivable pelvic operation. It is in greatest danger when the parametrium is affected by cancer, infiltrated with exudates or where tumors are adherent to the peritoneum over its site or situated retroperitoneally. The most common site for the injury is at the crossing of the uterine artery. In dogs the author has cut the ureter across and allowed the urine to drain into the peritoneal cavity. The dogs recovered, as the ureter became occluded, hydro-nephrosis and hydronephrosis resulting.

Ureteral fistulae may be divided into total and partial. In the former all urine escapes by the fistula and the danger of ascending renal infection is much greater. Cystoscopy, especially chromocystoscopy, is of aid in making an exact diagnosis. The ureteral catheter will not pass in cases of total fistula, the ureteral orifice appearing "silent" when observed. The condition of the kidney must be determined by palpation. Partial fistulae usually heal spontaneously, total heal only through complete stenosis of the duct with destruction of the kidney.

When a fistula occurs the proper treatment is to wait 3-4 weeks until the patient's condition has improved. Then an accurate diagnosis should be made. Partial fistulae usually heal spontaneously; if not, they should be treated like total fistulae. The operations are, vesical implantation, which is the ideal, but cannot be resorted to where the kidney has been badly infected or partly destroyed; nephrectomy where implantation is not feasible either because of the site of the injury or infection of the kidney, and finally maintenance of the fistula. For implantation the transperitoneal route is to be preferred. The bladder should be attached to the ureter by 3-4 interrupted sutures and tension avoided by anchoring the bladder. Drainage is required.

To avoid ureteral injuries a knowledge of the anatomy is essential. Special care must be exercised in the conditions referred to above. A lateral ligature on the ureter may be removed within 48 hours and no fistula result; a clamp may cause necrosis even if applied but a few minutes. Longitudinal wounds heal, but transverse wounds cause a fistula. If after injury, it is impossible to implant or to anastomose, Sampson advises implantation of the ureteral stump on the skin surface and nephrectomy at a later date, in preference to ligation and burying of the stump which always entails the possibility of renal infection.

Ureteral Calculi: With a Consideration of the Operative Technic Below the Pelvic Brim. JOHN F. ERDMANN, New York. *New York Medical Journal*, June 12, 1909.

For the removal of ureter calculi below the pelvic brim Erdmann recommends a combined transperitoneal and retroperitoneal operation: This operation is done through an incision like that of Kammerer or Deaver for appendicitis, the peritoneum being incised sufficiently to admit one or two fingers to palpate the ureter. The ureter is

located, and rapidly followed in its course until the object of the search is found. The outer flap of the peritoneum is then rapidly dissected away from its contiguous structures, and in a small enough well to expose the stone, which is held or raised by the intraperitoneal finger, the ureter is incised longitudinally over the stone just enough to allow of the expulsion of the calculus. Ordinarily, unless one finds a very large calculus, no sutures are required in the closure of the ureteral incision. A wick drain is placed down to the ureteral trauma, the peritoneum closed, and the remainder of the abdominal wound is closed to the emergence of the drain.

If when operating by the combined transperitoneal and retroperitoneal method one finds the stone impacted in the bladder wall, one may cut the bladder wall just above the ureteral entrance in the retroperitoneal dissection, and then cut through the mucous membrane of the bladder and the mural portion of the ureter, extract the stone, and sew up the bladder injury, draining posteriorly, and by the urethra with a permanent catheter for a few days, thus obviating the making of two distinct wounds of abdominal entry.

The Present Methods of Treating Gonorrhea in France (*Der gegenwärtige Stand der Gonorrhæotherapie in Frankreich*). K. F. HOFFMANN, Paris. *Muenchener Medizinische Wochenschrift*, May 11, 1909.

The author outlines the methods most in vogue. Small injections in the patient's control are not employed. Fournier's treatment by means of bicarbonate, and later the oils of copaiba and cubeb, is used by but few. On the whole Janet's irrigations are almost universally practised. The solution of potassium permanganate produces a vigorous serous exudation from the mucosa and also is strongly germicidal. When the inflammation is hyperacute hydragrym oxycyanatum 1:4,000, proves less irritating than the permanganate. If seen early—within six days after infection—abortive treatment is largely practised by injecting several c.cm. of 1-2 per cent. silver nitrate into the anterior urethra. After a few hours an anterior irrigation of 1-2,000 permanganate is given, to be repeated the next day. Thereafter twice daily complete irrigations into the bladder are given, the first one being preceded by cocaineization. Most gonorrheas heal within 2-3 weeks. Where strong mixed infections are encountered irrigations with sublimate 1:20,000 are practised. Complicating inflammations of the prostate, vesicles or testicles are rare. Their treatment is that generally accepted, but does not require cessation of irrigation.

The site of chronic gonorrheas is determined by filling the bladder and then in turn massaging the bulb, vesicles and prostate, with urination between each of these acts to examine the expressed secretion. The pendulous urethra is palpated after introducing a No. 25 rubber sound. Chronic gonorrhea is treated by systematic expression and irrigations.

Glass Drainage Tubes in Prostatic Surgery. FOLLEN CABOT. *The Post-Graduate*, March, 1909.

The tube is a double-current glass tube, of about 35 French scale, bent at a right angle. The bladder end is about four inches long and has a large eye near the end. Running up from the eye on the outside is a small glass tube made as a part of the large one. This follows the large tube straight up and does not curve. It projects an inch or a trifle more above the right angle turn. The outer part of the larger tube is 2½ inches long, and points toward the patient's pubic region. This double-flow tube may be held in place by adhesive plaster or a bandage with a hole cut for entrance of the small tube.

On each outlet we place rubber tubing, and if desirable may have a constant flow of solution in at the small tube, out at the large one. The flow can be closely watched and the tube is always clean and held in place. The distance the drainage tube projects into the bladder may be increased or reduced by a padding of gauze under the external arm of the tube;

Blastomycosis. GEORGE W. SPENCER. *Cleveland Medical and Surgical Reporter*, April, 1909.

The initial lesion is a split-pea sized nodule which after a time becomes pustular and breaks down into an ulcer. This may extend in several directions. In nearly all cases there is a papillary growth, sometimes fungating. There is often a discharge of an offensive mucoid material which crusts over the lesion. The blastomycetes can be found in this purulent discharge by the addition of a little liquor potassi, as doubly contained, refracting, budding bodies. The general aspect is that of a scrofulo-derma with papillary growth. The lesion is usually multiple as the patient inoculates himself. The case reported is a girl of two and one-half years with good family history and who lived in healthy surroundings. The lesion first appeared on the back of the neck as a small nodule which ulcerated and increased in size. Several nodules appeared upon the legs which, after ulcerating, developed a fungus-like growth which had an offensive exudate. The growth was well-defined and of cauliflower appearance. Healing resulted from the application of salicylic paste.

Blastomycosis of the Skin in the Philippines. CAPT. JAMES M. PHALEN and LIEUT. HENRY J. NICHOLS. *The Military Surgeon*, April, 1909.

Blastomycotic infection of the skin was first described in 1894 by Gilchrist and generalized blastomycosis by Busse in the same year. It is a common parasitic affection among both natives and whites in the Philippines. The disease is caused probably by round, double contoured bodies lying in and between the epithelial cells. There are three distinct forms. The mild cases show lesions which are slightly elevated above the surrounding skin, are irregular in outline, and when freed from scales presents a smooth, reddish surface. The lesions itch considerably. The course is toward a progressive extension of the patches with marked induration of the affected skin. The tendency to appear in unusual locations, and the frequency of symmetrical distribution are the features which distinguish it clinically from ring-worm, with which it has many points in common. It has been observed to occur on the back of the hands, the forearm, shoulder, face, front of the legs and the toes. Most of these cases are of many months' or even of years' standing. The mildest yield to strong local antiseptics, others only to potassium iodid internally.

The second type is the one most frequently encountered. In these cases the lesions are in quite large patches, sharply circumscribed and considerably elevated above the surrounding healthy skin. They are frequently observed to have a border elevated above the rest of the patch which is beset with miliary abscesses covered with crusts. The remainder of the area has a red, smooth surface covered with scales. These cases have long histories and have been variously diagnosed as syphilis, leprosy, tuberculosis, etc. The third class show far more extensive lesions and resemble closely the disease as described in the United States.

Profound Toxemia and Development of Metastases After X-Ray Treatment of a Skin Sarcoma (*Schwere Toxämie und Metastasenbildung nach Röntgenbehandlung eines Hautsarkoms*). H. KANITZ, Kolozsvár. *Medizinische Klinik*, April 4, 1909.

The patient came under observation with an apple-sized sessile tumor over the left scapula that had been growing for over two years without producing many general symptoms. On two succeeding days moderately-timed Roentgen-ray exposures were made, the skin surrounding the tumor being carefully protected. A few days after, swelling of the tumor with erythema of the overlying skin developed, and at the same time high fever, malaise and weakness. The erythema rapidly spread entirely around the thorax, and the tumor began to degenerate and slough; profound prostration and high fever continued. After two weeks, the temperature dropped by lysis, the erythema had disappeared, and a large portion of the tumor had sloughed away. One week after defervescence small

nodules made their appearance in the skin about the tumor; simultaneously the axillary glands on both sides enlarged. Eight days after these developments several pea-sized nodules appeared in the skin of the back and over the shoulders, and the cervical glands became palpable. These cutaneous metastases grew rapidly larger, signs of pulmonary metastases appeared, and the patient died six months after the two x-ray treatments.

Syphilis of the Stomach. ARTHUR CURTIS, Chicago. *Journal of the American Medical Association*, April 10, 1909.

Curtis gives an elaborate report of a case of gastric syphilis which is notable on account of the rarity with which it is diagnosed and the fact that serious complications amenable to treatment have arisen in 2 of the 16 cases which have been reported. One is the case of Frankel in which death was due to extensive ulceration and peritonitis, and the other that of Flexner, in which death occurred from perforated syphilitic ulcer. He also discusses the diagnosis. The synopsis of cases in the literature shows 4 important diagnostic factors: (1) The seat of primary involvement is, as a rule, the submucosa, the gummatous tissue invading other coats secondarily; (2) miliary gummata, sometimes with giant cells of the Langhans type; (3) *Spirochaeta pallida*. These are not to be depended on according to the views of Koch and Schmorl; (4) peculiar vascular changes of high grade, resulting in partial occlusion or partial obliteration of vessels. The patient was in the surgical service of Dr. Braun at the Krankenhaus Friedrichshain, Berlin. A gastrectomy was performed and a histologic examination made. The diagnosis had to exclude simple gastric ulcer and tuberculous ulcer. The former did not account for plate-like non-cicatricial thickening of the stomach wall of extensive vascular proliferation with high grade vascular occlusion. Tuberculosis was more difficult to exclude, but in addition to the epithelioid cells three factors opposed tuberculosis: First, there was no caseation; second, there was no sharp demarcation from surrounding tissues; third, there was present in each nodule a liberal number of small blood-vessels. Accessory factors in the diagnosis were the negative tuberculin tests, lack of tubercles on the serosa and absence of tubercle bacilli. Syphilis, therefore, had to be accepted as the diagnosis. Curtis emphasizes the value in this case of utilizing every available resource in diagnosis of stomach diseases. Syphilis is probably a more frequent cause of gastric tumor than is supposed, and, since the therapeutic mercurial test is so easily applied, it is at least worthy of consideration in certain selected cases. The patient made an uneventful recovery after the operation.

Bone Transference. Report of a Case of Operation After the Method of Huntington. ERNEST A. CODMAN, Boston. *Annals of Surgery*, June, 1909.

The treatment of osteomyelitis of the long bones has recently been modified by the adoption of subperiosteal resection. Nichols has shown that in chronic osteomyelitis much time may be saved to the patient by subperiosteal resection of all the diseased shaft, trusting to periosteal regeneration. Sometimes, however, this regeneration fails to take place, as in Codman's case, and then the patient is, of course, worse off than after the older and more conservative operation.

In the case reported a man, 32, had chronic traumatic osteomyelitis of the tibia, with discharging sinus for 19 years. In 1904 most of the shaft of the bone was removed subperiosteally by J. C. Warren. The sinus persisted and no bone generation took place. A prosthesis was required. About a year later Codman performed the operation recommended by T. W. Huntington—transference of the fibula to replace the tibia. Only the upper end of the fibula was divided, and the bone was forced into the upper stump of the tibia. The sinus at the lower end of the leg was closed, and finally healed, by plastic operation.

The fibula has satisfactorily filled its vicarious function and, aside from a slight limp, the patient walks normally.

and without artificial support. X-ray pictures at various intervals in the three years since operation show the striking hypertrophy the transplanted fibula has undergone.

Ambulatory Treatment of Fractures of the Thigh; a New Traction Apparatus for Applying Spica Casts and Various Orthopedic Manipulations. CHESTER M. ECHOLS. *The Medical Herald*, March, 1909.

For the proper application of a plaster cast in the treatment of fractures of the thigh, the following conditions are necessary:

1. The patient under anesthesia must be supported in a horizontal position several inches above the table so as to permit the winding of the plaster bandage about the patient's thigh and pelvis without obstruction.

2. There must be sufficient traction on the affected limb to overcome all shortening. The traction should be uniform and continuous and not permit any wobbling or rotation of the limb during the application and hardening of the cast.

3. There must be counter traction against the perineum, axillae, or elsewhere equal to the traction on the leg.

4. The supports which hold the patient suspended several inches above the table must be of such a character as not to interfere with the winding of the bandages. Thus, if the patient's pelvis is supported by a box or an inverted basin, this support would form an obstruction to the winding of the plaster.

The traction apparatus devised by the author is light and durable and capable of making a traction of 500 pounds with the lower limbs in any desired position. The apparatus is in the form of a drawing compass with a sacral rest and two vertical foot posts. The thin metal sacral plate is adjustable to any height. On this the patient rests so that no obstruction is offered to the winding of a snugly fitting cast. The leg bars allow an abduction of 180° and can be securely held at any point by a set screw. Sliding and telescoping crutches are attached to the leg bars. To the sole plates are attached double pulleys over which run a combination tackle block and clamping device, so that when the operator stops pulling, the clamp pinches the cord automatically.

The apparatus is not only useful in fractures of the femur, but is of value in applying casts in congenital dislocation of the hips, for body cases in Pott's disease and in osteotomy of the femur or wiring or nailing fractured parts where considerable traction is needed.

A Note on the Treatment of Dislocation of the Peroneal Tendons. E. A. TRACY, Boston. *Interstate Medical Journal*, March, 1909.

In this injury the common sheath of the peroneal tendons and the external annular ligament are torn across. It is necessary therefore (in recent cases) to keep the foot immobilized for a period of four weeks in the position at right angles to the leg, neither inverted or everted, as this position relaxes the calcaneo-fibular ligament. Very frequently the lesion passes unrecognized and a condition of chronic displacement with resulting disability ensues. For this reason, it is important to examine carefully all sprains of the outer ankle for dislocated or dislocatable tendons. For chronic displacement of the tendons Tracy recommends the Kraske or Kramer operation. This consists in cutting a flap of periosteum on the lower portion of the fibula, splitting off of the fibula (if desired) a thin layer of bone adherent to the flaps of the periosteum, and turning and binding down this flap with sutures, to the common sheath and tissues back of the tendons. The operation of deepening of the peroneal groove, which has been advised by some surgeons, the author regards as useless.

Habitual or Recurrent Anterior Dislocation of the Shoulder. II. Treatment. H. T. THOMAS, Philadelphia. *American Journal of the Medical Sciences*, March, 1909.

The only successful method of treating this disorder, in

the author's opinion, is by open operation. Braces, while diminishing the number of recurrences, do so only at the expense of much impairment of function and consequent atrophy of the muscles. The operation is practically free from danger, inasmuch as no fatal issue has been recorded in the 34 reported operations. In only one instance was a recurrence noted after operation and this occurred in an epileptic. The author believes that the best access is obtained by an axillary incision and division of the subscapularis muscle. The joint should be opened in every case in order to note and remedy any intra-articular complications. The rent in the capsule, if found, should be sutured. Otherwise the enlarged capsule is shortened, either by reefing, by excision of a piece, or by overlapping an incision made into the capsule. The author reports one case in which a tear in the anterior and inferior aspect of the capsule was found and sutured, and in which the ultimate functional result was perfect.

Sinus Thrombosis of Otitic Origin and Its Relation to Streptococcemia. EMIL GRUENING. *New York Medical Journal*, June 5, 1909.

Recent studies on the bacteriology of acute affections of the middle ear show that they are due in more than 50 per cent. of the cases to the presence of the streptococcus pyogenes and is about 15 per cent. to the streptococcus mucosus. In subsequent sinus thrombosis, in many cases there is a systemic infection due to the primary invading organism. The blood cultures taken in ten cases were positive in seven. Of the ten cases (all having jugular ligations) eight recovered. Two illustrative cases are reported.

That a positive blood culture can be advantageously used as important evidence of the presence of a lateral sinus thrombus has been repeatedly demonstrated at Mt. Sinai Hospital. Patients who, after a thorough mastoid operation, did not do well, and whose temperature remained high though the accessible part of the sinus appeared healthy, improved immediately upon ligation of the jugular, which was thought advisable as the result of a positive blood culture.

In two cases admitted to the medical wards with high fever, systemic infection, and no previous history as to ear trouble, Libman arrived at the diagnosis of sinus thrombosis by the exclusion of other foci in the presence of a positive blood culture. In both these cases the lateral sinus was found thrombosed, though with the exception of old perforations of the drum, there were no external evidences of ear disease. The two patients recovered after evacuation of thrombi from the lateral sinus, one with and one without ligation of the jugular.

The Exciting Cause of Trachoma (Die Erreger des Trachoms). PROF. GREEFF, Berlin. *Deutsche Medizinische Wochenschrift*, March 25, 1909.

Greeff believes that he has finally discovered the long-sought-for parasite of trachoma. It is a round or oval-shaped coccus, occurring in clumps, and is smaller than any coccus thus far known. It stains violet or reddish with Grenisa stain, weakly with the aniline dyes, and not at all with the Gram stain. The cocci are present within the epithelial cells and in the stringy mucus. The clumps are frequently surrounded by a halo. These bacteria have not been found in any malady but trachoma. In order to find the germ, a little of the superficial conjunctival epithelium is scraped off and spread upon a cover glass. It is necessary to obtain a fresh untreated case of trachoma, for as soon as treatment has begun, the germs show a tendency to disappear. After fixing the preparation in absolute alcohol for 20-30 minutes, a stain of the following composition is applied for nine hours: 12 parts of Gremsa-eosin solution, three parts of Azure I, and three parts of Azure II. While no cultural or experimental observations have been carried out by the author, Greeff is convinced that the germ he describes is the true cause of trachoma.

The Coexistence of the Symptoms of Appendicitis and Right Kidney and Ureteral Irritation. LE ROY YOUNG. *The Journal of the Arkansas Medical Society*, May 15, 1909.

Three cases are reported where the patients were found at operation to be suffering from a diseased condition of the appendix. All of them had significant symptoms which complicated the diagnosis as there was a suspicion that either the right kidney or ureter was involved. In the first case, no adhesions being present, the author explains the condition by claiming that it was probably the result of disturbance transmitted through the nerve supply to the ureter which nerves are intimately connected with the superior mesenteric plexus which sends branches to the appendix and adjacent parts of the intestinal tract. In the last two cases it seems fair to conclude that the ureteral irritation was due to an inflammatory condition originating from the diseased appendix and carried forward through contiguity of tissue. When we take into consideration the relations of the organs in the right lower quadrant of the abdomen, it will not be difficult to understand how an appendicitis may subsequently involve the right ureter. This is especially true in those cases in which the appendix occupies the retrocecal space, resting upon the peritoneum over the psoas muscle. The ureter lies on this muscle behind the peritoneum and to the inner side of the cecum. In an appendicitis occupying the retrocecal space, inflammatory adhesions may take place over the muscle, and the peritoneum may be perforated at this point. Then it is easy to understand how the inflammatory process might involve the ureter, and, if sufficiently virulent, even perforate it. After this has occurred it is a reasonable conclusion that the kidney itself might be involved by an ascending infection. If suppuration does not supervene, the involvement of the ureter in the inflammatory process would cause pain radiating in a manner similar to the radiation of pain in the passage of a renal calculus, or irritation from other like causes.

Relation of Anomalous Renal Bloodvessels to Hydro-nephrosis. W. J. MAYO, W. F. BRAASCH, and W. C. MACCARTY, Rochester, Minn., *Journal American Medical Association*, May 1, 1909.

Mayo, Braasch and MacCarty call attention to the occurrence of anomalous renal bloodvessels and their relation to hydronephrosis. In twenty of the twenty-seven cases here reported, such vessels were present and the obstruction in each instance was at a point where they crossed the ureteropelvic juncture. The vessels passed to the lower pole of the kidneys a little to one side of the midline and varied from the size of a knitting needle to that of the radial. In all but two, the arteries came from the renal, sometimes passing in front and sometimes behind the ureter, but in either position the pressure of the artery seemed capable of developing the kink. The diagnostic data are: (1) Appearance of symptoms in the young adult; (2) intermittent attacks of abdominal pain referred to the kidney zone and occurring with more or less regularity during a number of years; (3) cystic tumor palpable in about a third of the cases; (4) presence of small amounts of pus in the urine; (5) usual absence of hemorrhagic urine, high temperature and bladder irritability; (6) typical cystoscopic finding, such as an occasional weak spurt of urine, slight obstruction of the catheter near the uteropelvic juncture, about 50 cm. of the catheter inserted into the ureter and pelvis, rapid drainage of pale urine with a variable amount of pus, and at least 40 c.c. injected without return flow before producing renal colic.

Cecostomy and Continuous Coloclysis in General and Other Peritonitis. C. A. L. REED, Cincinnati, *Journal of the American Medical Association*, May 22, 1909.

Reed describes a method of treatment he has been using for some time in certain cases of peritonitis and some other conditions, as follows: Recognizing the general peritonitis as always a result of infection, he places the patient in the Trendelenburg position and operates in the usual way to find, and if possible to remove the source of infection.

Whatever may be the details of that operation, he brings up the cecum and fixes it in an incision directly over its situs, then opens the loop thus anchored and cuts the opening; he then inserts a soft rubber catheter and fixes it by sutures to the abdominal wall. He puts a self-retaining effluent tube into the rectum. Through the cecal tube he then treats the colon as the conditions may require. Under this last heading he first mentions the treatment of general peritonitis in *extremis*, that is with a subnormal temperature, uncountable pulse, and extreme distention. The first thing, of course, is to lessen the distention. Then immediately after the operation, or as soon as possible, he begins continuous irrigation of the colon with normal salt solution at 110° F. About three quarts are retained before the effluent current is established through the rectal tube. This internal application of heat directly to the solar plexus and by the absorption of water incidentally by the colon a reaction is generally secured with remarkable promptness. As soon as this occurs the free flow from the irrigator is stopped and the drop by drop clysis is substituted and continued for the next twenty-four hours or more. If the stomach is rebellious the cecal tube is used for feeding. Other uses of this treatment are in acute gastric ulcer when it is desirable to keep the stomach at rest for a while before operating, after gastroenterostomy, cases of malignant disease of the stomach or of the upper segment of the intestinal tract where operation is not practicable. He has already reported elsewhere on its utility in certain cases of intraintestinal disease requiring direct medication. The treatment is simple and safe and its restorative action is beyond question. A complete control over the colon facilitates the elimination of toxins. In conclusion he urges that cecostomy be adopted rather than appendicostomy. As compared with the presenting part of the cecum the ceco-appendiceal juncture is an inch farther from the abdominal wall and there is the possibility of dangerous tension. The distensive pressure of a tube inserted and kept in the narrow appendix causes it to perish during the first few days after operating and thus an appendicostomy always eventually becomes a cecostomy. It is better therefore to make it a cecostomy at once.

A New Method of Recognizing Ulcers of the Upper Digestive Tract and Localizing Them. M. EINHORN, New York. *Medical Record*, April 3, 1909.

The method consists in the swallowing of the author's "duodenal bucket," attached to a long silk thread. The bucket is swallowed in the evening and is removed the next morning before breakfast. If an ulcer is present a brown or dirty black discoloration is found on the string and by measuring the distance of the discoloration from the teeth the site of the ulcer, according to the author, can be approximately determined. This method is not of value in ulcers of the fundus or of the greater curvature. For the localization of these ulcers, the author has devised a bag covered with gauze, which is introduced into the stomach in the collapsed condition, and is then inflated. At the end of half an hour, the bag is allowed to collapse and is withdrawn. If ulcers are present, brownish areas will be noted on the gauze corresponding to the site of the ulcer. This latter method, however, is only applicable to patients who are accustomed to the use of the stomach tube.

The Intra-Abdominal Injection of Oxygen as Studied in Animals. Report of Cases in the Human Subject. H. D. MEEKER, New York. *New York Medical Journal*, April 10, 1909.

The result of the author's animal experiments showed that: 1. Oxygen is completely absorbed from the abdominal cavity in less than 72 hours. 2. The injection acts as a slight respiratory and cardiac stimulant. 3. The blood pressure is not affected when the pressure of the gas is moderate. 4. The recovery from the anesthetic is hastened considerably. 5. The injection tends to prevent the formation of adhesions. 6. Peristalsis is stimulated. 7. Oxygen is not a peritoneal irritant. The author reports six cases in which the injection of oxygen was tried on

the human subject. In four patients in whom the injection was made for operative collapse, the effect was strikingly beneficial. In two patients the injection was done for tubercular peritonitis.

Reports of 300 Cases Treated with a Culture of Lactic Acid Bacteria. C. E. NORTH, New York. *Medical Record*, March 27, 1909.

Basing his observations on previously conducted experiments which showed an antagonism between lactic acid and bacteria and some of the putrefactive and pathogenic organisms, North has applied cultures of the bacillus bulgaris of Metschnikoff to various conditions in which such pathogenic organisms play an important or the main rôle. It has been used in atrophic rhinitis, acute rhinitis, otitis media, ethmoiditis-antral disease, tuberculous sinuses, cystitis, diarrhea, leucorrhea, suppurating wounds, gonorrheal ophthalmia and conjunctivitis. While an improvement was noted in nearly all of these maladies, the best results were obtained in atrophic and acute rhinitis, ethmoiditis, gonorrheal ophthalmia and conjunctivitis. (In the gonorrheal ophthalmia cases, silver preparations were also used.) The few surgical cases were not appreciably benefited. The culture is used directly on the inflammatory area as either a wash or spray. It is entirely harmless. The author believes that these cultures will find a place in therapeutics. He intends to subject this method to further investigation.

Diagnosis and Internal Treatment of Infantile Hypertrophic Pyloric Stenosis (*Erkennung und interne Behandlung der hypertrophischen Pylorusstenose der Säuglinge*). IBRAHIM. *Therapeutische Monatsschrift*, 1909.

Contrasting with the operative treatment of the condition and its associated high mortality, the experience of Ibrahim with internal treatment is of great interest. The writer finds that 83 per cent. of his cases were cured, and Heubner reports 90.5 per cent. cures. The disease occurs in the first four weeks of life. Visible gastric peristalsis, frequent projectile vomiting, are characteristic symptoms; a palpable tumor at the situation of the pylorus is pathognomonic. Daily gastric lavage and cataplasms on the abdomen relieve stagnation of food and pylorospasm. Most important is the consideration of the mother's milk. Defects must be corrected and, if necessary, breast milk must be replaced by food mixtures poor in fats, malzsuppe, etc. If, after minute attention to diet, vomiting continues, rectal feeding may be practised for a short time. Then a strict régime should be instituted, in which mother's milk is added very slowly to the diet.

The Prevention of Adhesions After Abdominal Operations, with Particular Reference to Olive Oil. W. O. HENRY. *The Medical Era*, May, 1909.

Having observed the beneficial effects of sterile olive oil in the prevention of adhesions on wounded surfaces, in that it keeps the parts moist and separated, the author was led to use it in the lower abdominal cavity and pelvis, after laparotomies, to prevent post-operative adhesions. To prevent adhesions he advises:

First. As far as possible cover up, with healthy, smooth peritoneum, all raw surfaces.

Second. Avoid injuring the peritoneum unnecessarily either by using sponges that are too hot or too rough, or by bruising it with instruments, such as clamps, forceps or needles.

Third. By care in leaving the least possible amount of raw or rough surfaces where ligatures are used, or sutures are introduced.

Fourth. By very careful adjustment of the peritoneal layer in closing the abdominal wound or covering the stumps.

Fifth. By a free use of sterile olive oil rubbed well into the raw surfaces, and into rough or otherwise injured peritoneum.

Chronic Glanders in Man, and Its Treatment and Cure by Dead B. Mallei (*Ueber chronischen Rotz beim Menschen und seine spezifische Behandlung und Heilung durch abgetötete Rotzbacillen*). KARL ZIELER, Würzburg. *Medizinische Klinik*, May 2, 1909.

The specific treatment of the case the writer reports gave such a remarkably striking result that, although the report embodies a single case, the work is worthy of attention. The patient had contracted glanders of the upper lip and nose six years before. Despite all treatment, the ulcerations were steadily progressive, so that, when the case came under Zieler's observation, the entire nose was gone. The nasal mucous membrane was extensively involved, therefore presenting a type of glanders in which the prognosis is bad. After glanders was proven by the mallein test and by animal inoculation, x-ray treatment was tried without improvement. The writer then prepared a vaccine after the method of Wright, of the killed-off B. Mallei. In a period of about two months the patient was given seven injections. At the end of this period, the ulceration had entirely healed. The author realizes that chronic glanders may result even after a latent period of many years, and therefore does not consider this case cured; but he feels justified in reporting the case by the striking result of the vaccine therapy after six years of futile treatment by other means.

The Mercurial Treatment for Tuberculosis, with a Report of Fourteen Cases and a Suggestion for a New Method of Administering Mercury. THOMAS J. BEASLEY. *Indianapolis Medical Journal*, May, 1909.

The author has come to the conclusion that the idea that mercury is a specific for tuberculosis is erroneous, although in a number of cases there is no doubt that the proper administration of the drug has decidedly improved the patient's condition. The administration has been made with an insoluble mercurial compound, the salicylate in an oily base such as liquid paraffin. A 10 per cent. solution gives the best results. The insoluble mercurial is steadily and slowly changed into a soluble salt by the tissue fluids and as absorption is slow, it is only necessary to give treatment every week to ten days. Fourteen cases were treated with mercury, only four showing any improvement.

Diffuse Painful Lipoma of the Foot. A. H. TUBBY, London, England. *The American Journal of Orthopedic Surgery*, May, 1909.

Under this title, the author describes a condition that he believes has never been recognized; he has seen five cases. The disease is an acquired one, with sharp macro- and microscopic differences from the congenital diffuse lipoma. In all of Tubby's cases, the tumor was situated between the inner edge of the sole of the foot and the internal malleolus, and did not extend further forward than the anterior part of the sustentaculum tali. The characteristics of the tumor are: Slow growth, indolence, extreme tenderness, and vascularity when incised. None of the cases recurred after removal. Microscopically, the tumor is composed entirely of fat, that is ramified by large and thick-walled bloodvessels. Nerves or nerve-endings could not be demonstrated, and there is, therefore, nothing to show why the tumor is so painful. The importance of the condition rests on its diagnosis—especially its differentiation from flat-foot and other static deformities.

Schlatter's Disease. J. E. BOWSER, Penrith, Scotland. *Edinburgh Medical Journal*, March, 1909.

Schlatter's disease is an avulsion of the tongue-shaped projection of the tubercle of the tibia. Adolescents are peculiarly predisposed to this lesion for the reason that this process is most marked at this period of life and also because athletic exercises are more often indulged in. The malady occasionally lasts for weeks or months and frequently arouses but little attention. The symptoms consist in pain and tenderness at the site of the tubercle and a limping gait. The author reports a case cured by the application of Bier's hyperemia.

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OBSERVATIONS IN PRURITUS ANI.

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Pruritus ani means itching of the anus, yet we do not ordinarily make a diagnosis of pruritus ani unless we find more than the subjective symptom of itching, *i. e.*, unless we find pathological changes, the skin thickened and edematous, of whitish sodden appearance, deprived of its natural pigment and moistened with a foul smelling secretion, and possibly showing here and there erosions due to scratching, and fissure due to stretching of the integument thus deprived of its normal elasticity. So, technically, we define pruritus ani as a symptom, but, clinically, we look upon it as a pathological condition of the anal and peri-anal integument producing the symptom itching. And it is best that instead of regarding chiefly the symptom—itching—we look rather to the underlying pathological changes that occur in the skin, for by so doing we are keeping before us changes that must be remedied.

The pruritus ani of long standing without a lesion, is not of a severe type. It seems to be a neurosis of central origin and only a part of a more general sensation of itching. It occurs most frequently in neurasthenics. An inveterate pruritis is always associated with changes of pathological nature.

I believe, however, that there has been a stage in the development of true pruritus ani when there were no pathological changes in peri-anal skin and when, had the cause been relieved, there would never have been any pathology to the peri-anal structures—there would never have been any true pruritus ani. This stage, however, is simply an early manifestation of congestion and could not be called true pruritus ani, but it is a condition that could after long standing produce the pathological changes and troublesome symptoms characterizing the true or inveterate pruritus ani.

Numerous are the causes that have been assigned

to pruritus ani. Almost every disease of the rectum such as fissure, piles, fistula, ulceration, disease of the crypts, foreign bodies, constipation, catarrh, gonorrhea, syphilis, cestodes and tumors, have been mentioned as a cause of pruritus. Digestive disorders, improper diet, gastro-intestinal fermentation, constitutional disorders such as hepatitis, diabetes, gout and rheumatism are said to produce it. It is also said to be produced in a reflex manner by irritating diseases or conditions of genito-urinary apparatus. It is said to be caused by outside agents or irritants affecting the skin of these parts such as pediculi and the trichophyton. Also it is said to result from other skin diseases affecting these parts such as eczema and herpes. A very small ulcer in the anal canal is believed by Dr. F. C. Wallis, of London, to cause 90% or more of these cases. Dr. T. C. Hill, of Boston, places this first among the causes. Dr. Mason, of Omaha, is inclined to hold the same views as does Dr. Wallis. Dr. J. P. Tuttle does not emphasize ulcer as a cause of pruritus ani.

I believe that by far the larger number of these minute ulcers in the anal canal found with pruritus ani are complications, not the cause—that they are due to stretching of the anus already deprived of its normal elasticity by pruritus ani. Where patients are often constipated, or are often having speculae passed, it is the rule to find small ulcers or cracks or abrasions and it seems that this is only to be expected.

Such a varied assortment of diseases to provoke a common symptom—pruritus ani! Gout, pediculosis, ulcer! How unlike, yet producing a like result!

Long since, the writer has noticed that the most common accompanying condition was indeed a congestion of contiguous parts. It was rare to find a case without hyperemia or chronic inflammation of the mucosa of rectum and sigmoid, both signifying a congestion also of the more remote part of the gut, the anus. This is true notwithstanding the fact that the blood from the lower part of the gut is returned to the general circulation by the inferior vena cava, as well as by portal circulation.

Anything tending to obstruct the portal circula-

* Read before the Bellevue Alumni Association, June 2, 1909.

tion undoubtedly tends to congest the peri-anal structures and produce piles. A determination of excessive supply to the sigmoid and upper rectum means also an excessive amount to the anus. It would seem, then, that this one cause—congestion of contiguous parts—might logically produce the pathological changes found in true pruritus. If we assume the congestion of the parts of any duration then the expected result would be a productive inflammation with diffuse infiltration of connective tissue cells, these in the course of time producing an unnatural pressure on the numerous nerve filaments with which the anal integument is so richly supplied. It is even found that more of this resulting fibrous tissue is located around the nerves than elsewhere. If we have a chronic heart or lung lesion, the liver is apt to be in a state of chronic hyperemia or congestion and we are not surprised at the production of connective tissue with atrophy of liver cells, as the amount of connective tissue increases and contracts and hardens—we are not surprised at the clubbing of fingers, nor, as the compensation becomes more and more disturbed, are we surprised to find a cyanotic induration of the viscera generally.

Thus a congestion, if continuous or frequently repeated, fairly regularly results in a sclerosis. When we find the sclerotic condition of the peri-anal skin it is very natural to think of the possibility of its being caused by a congestion. Most of the recognized causes of pruritus ani are associated with a congestion of part or all of the anal and peri-anal integument. For instance, fissure, piles and fistula, tumors, ulceration and catarrh of the rectum attract to the parts an abnormal supply of blood. Foreign bodies and cestodes certainly cause some hyperemia or congestion of the rectum (sometimes to a marked degree). Digestive disorders are very regularly symptoms of a catarrhal condition of the stomach and intestines. Constipation is usually associated with a catarrhal condition of the bowels. Gout and chronic rheumatism and muscular rheumatism find fit subjects for their manifestation among those who are constipated and who suffer frequently from digestive disorders.

The outside irritants, such as pediculi, cause repeated scratching and congestion. Eczema and herpes are associated with some congestion, the effects of which may be prolonged by scratching.

Those cases that are said to be produced in a reflex manner may be due to a congestion of peri-anal skin since the source of irritation is usually in the bladder, prostate or urethra and a determina-

tion of excessive blood supply to these parts is apt to mean also some excess to the rectum. But this is not necessarily the case. The sensation is frequently wrongly referred to the anus or rectum and scratching results in congestion.

But whatever the cause, when the results of this congestion are once established, there are an hypertrophy of the connective tissue element and later a tendency towards an atrophic condition, the connective tissue pressing on the nerve terminals, which could produce all the unpleasant sensations that go with pruritus. The pressure also exerting itself on the blood supply may impair the nutrition of the superficial layers of epithelium, thus in a measure accounting for the abnormal color and appearance. The excessive moisture, however, is sufficient to produce this changed appearance.

There is a lack of tone to the skin shown in the condition of the sebaceous glands. Their condition we are usually unable to make out, solely because of excessive moisture. In many cases, when treating these patients with a weak solution of silver nitrate, while the parts were kept dry with gauze supported by a bandage, I was surprised to note the great number of large sebaceous plugs with heads blackened by silver nitrate, showing either a marked absence of tone in the skin or excessive secretion of the glands.

I have purposely omitted from the list of causes of pruritus one mentioned by many, viz., excessive moisture, for I regard it as a symptom of pruritus rather than its cause. Many are the sources from which this moisture is supposed to come in order to produce pruritus, ulcers, fissures, catarrhal condition of the bowels, etc. By some it is thought this moisture escapes with flatus from time to time but it seems that its supply is too constant for such a source; the moisture is ever present whether gas is expelled or not. It does not seem possible for it to come from within unless we have at least a partial incontinence of sphincter. Again, if moisture does come from an ulcer or fissure, when these are removed, there may still remain the characteristic moisture. It is my opinion that the moisture comes from the sweat glands in the peri-anal skin possibly, also, to some degree from the sebaceous glands. When there is an inflammation of a mucous membrane we expect an excessive secretion of glandular structures. The over-production of moisture with pruritus behaves like an hyperidrosis whether it is present as part of the inflammation or whether the glands are irritated by pressure of connective tissue.

About two years ago I began treating some cases with the x-ray, giving two exposures a week, until

there was some dermatitis produced, then one exposure a week. One of the first changes noticed in these cases was a decrease of this excessive moisture which entirely disappeared when the dermatitis had been produced from one to three times. Some of the patients so treated have remained free from symptoms until the present time. In about one-half the cases so treated improvement lasted three to seven months. Those cases in which symptoms recurred after several months, behaved much like a few cases of axillary hyperidrosis treated by x -ray exposures where excessive moisture remained away for several months and again became more or less troublesome.

Aside from the diminution or disappearance of moisture after x -ray exposures, there was noticed regularly a decrease in size of the sebaceous follicles. So often was this noted with the disappearance of moisture that I am not entirely convinced that some of the moisture is not from this source. With a constant irritation of these glands it is not unlikely that there is an excessive flow of their secretions which would naturally be more fluid than when the flow is normal. From x -ray exposures, there is also a more marked atrophy of the sebaceous glands than of the sweat glands, which, again, would suggest the possibility of some of the so-called moisture originating in these glands.

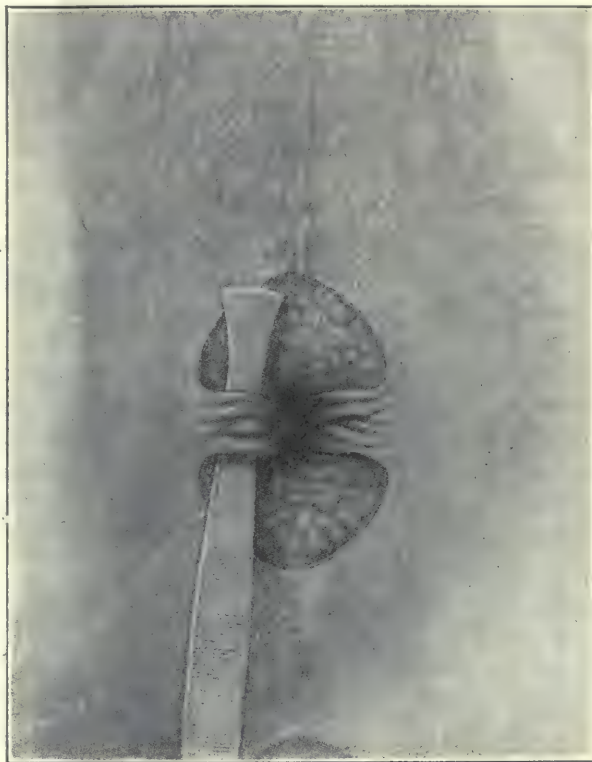
However, whatever the cause, there is a fibrous infiltration of the affected skin and this skin is covered by epithelium diseased either from excessive moisture or from scant blood supply or both, and this associated with a frequently intolerable itching with its resulting abrasions. Accompanying many cases there are also an hypertrophied condition of the columns of Morgagni, a rugged thickened condition of the walls of the crypts, and an hypertrophy of some of the papillæ about the dentate border. Such a condition is apt to be permanent, if left to itself. A removal of the cause temporarily removes the itching, but as this tissue becomes older and more dense a recurrence of only a slight congestion is sufficient to produce as much pressure on the nerve filaments as would a greater amount of congestion when the tissues were less dense. Consequently patients that we have been able to make comfortable have recurrence of itching after the least indiscretion in diet producing an irritation and congestion of the gastro-intestinal tract.

Some patients can be kept comfortable by the ordinary local treatments and by keeping the parts dry if we can also keep them free from any gastro-intestinal disturbances.

Where, however, the basis of the trouble is a

marked catarrhal condition of the lower bowel constantly receiving an excessive supply of blood the symptoms are more troublesome and demand a more radical treatment.

When beginning the treatment of any case all associated diseased conditions should be remedied. All ulcerations should be cauterized or excised under cocaine. Polypi, external and internal hemorrhoids should be removed. A careful examination should be made of the papillæ about the crypts,



and if any of these are found hypertrophied they should be removed; if there is found tenderness of any projecting points apparently not hypertrophied they likewise should be snipped off.

The condition of the bowels demands the closest attention. The diet of each patient must be that best suited to the individual. With some, the least digestive disturbance and least itching are produced when starches and sugars are limited. With others, a meal composed principally of nitrogenous food causes both marked unrest and exacerbation of itching. A few are particularly susceptible to berries and shell fish, while all seem to be made worse by alcohol. That kind of food calculated to produce the least digestive disturbance is least calculated to cause itching.

Aside from diet attention must be given to the constipation and catarrh of the bowels found in

most of the cases. The bowels should be regulated by food when possible, but when medicine is needed a small dose of compound licorice powder or cascara should be given twice a day until pulsatious movements are secured, when the dose is gradually decreased. Also an occasional saline should be given. For the catarrh we should irrigate the bowels once a day, first with a faintly alkaline solution to get rid of adhering mucus, and, after this is passed, with a mild astringent solution. The introduction through a proctoscope three times a week of some mild astringent solution seems to be very beneficial. While making such application the patient is in the knee-chest position and kept so for ten minutes, after which time he is directed to lie on the right side in order to facilitate the flow of the fluid from the left to the right side. If the mucous membrane should be found dry and the seat of an atrophic catarrh three ounces of olive oil or one to one-and-a-half ounces of castor oil may be introduced by the same method with good results.

With the milder cases, the above measures, together with local applications of weak solutions of silver nitrate, *i. e.*, 20 to 60 grains to the ounce, answer very well and the patients are kept quite comfortable most of the time. In these cases sometimes a daily application of an ointment of oil of Cade helps.

At times, when cases are somewhat more troublesome, *stretching the sphincter* is followed by improvement. This is done easily by the blade of a Sims' speculum and a finger gently drawn in opposite directions. Enough can be accomplished in this manner with little or no discomfort without even local anesthesia to produce decidedly good results temporarily in many cases.

When relief is not secured by cleanliness, keeping the parts dry and local applications of moderate strength, together with efforts directed at removal of the cause, then it seems to be generally agreed that some more radical measure must be adopted in the direction of destruction or partial destruction of the pathological tissue. Among the agents used for this purpose are strong solutions of *silver nitrate* and the ointment of *nitrate of mercury*, which were, I think, first suggested by Dr. Lewis J. Adler of Philadelphia. The silver nitrate may be used even in saturated solution, and after this application, nitrate of mercury ointment may be immediately applied. Another good application is *phenol*, painted over parts, care being taken in the use of this and the strong nitrate of silver solutions not to allow them to get into the anal canal, where ulceration may follow. After

either application is made it is allowed to remain a few minutes and then the parts are washed with water.

Such applications are calculated to destroy the superficial layers of the skin and should not be repeated until desquamation had occurred. The French surgeons have employed the *curette* much for this purpose. Some prefer the *Paquelin cautery* to destroy the superficial layers of the skin. All these and others I have employed with satisfactory results in some cases, but too frequently there is disappointment and something more radical, with results more enduring, is desirable.

In trying to arrive at the best method of treatment of bad cases, the writer, acting on suggestions of Dr. J. P. Tuttle in his lectures at the New York Polyclinic, subjected some of his worst cases to *x-rays* and, though results are not permanent in all cases, they are decidedly more lasting than when superficial layers were destroyed by local applications; and if we but bear in mind the histological changes effected by *x-rays* such result might readily be expected. Oudin, Barthelemy and Darier have made careful studies of skin taken from areas of alopecia experimentally produced by *x-rays* in guinea-pigs. Their findings are in part as follows: "The destruction of the hair follicles and epidermis where the cutis and vessels are only in the slightest degree altered is very significant. The thickening of the epidermis in all its layers, the enormous increase in kerato-hyalin and extreme atrophy of the follicles are to be looked on as a reaction against an irritation of unusual severity. The irritation seems to increase the vitality of the least differentiated tissues, while it produces degeneration and atrophy of the more highly differentiated structures—hairs, nails and glands."

Pusey and Caldwell, under Hyperidrosis and Seborrhea, in *The Roentgen Rays in Therapeutics and Diagnosis*, says: "The effect of the *x-ray* is perhaps less upon the sweat glands than upon the hair follicles or sebaceous glands. Histological studies, however, indicate, that there is some atrophy of the sweat glands as the result of *x-ray* exposures and upon theoretical grounds, therefore, I suggested the use of *x-rays* in hyperidrosis."

We have, therefore, produced by the *x-ray* the destruction of the epidermis sought after in the employment of counter-irritants, caustics, cautery, etc. In addition to this, however, we secure a partial or complete destruction of both sebaceous and sweat glands and the few hair follicles with which this part of the integument is supplied.

This clears up the situation somewhat. In this

area the sebaceous glands are very numerous and, filled with bacteria and decomposing materials, they may contribute to the irritation. They certainly render thorough cleansing of the parts difficult or impossible. The removal of hair follicles removes some irritation from the parts.

One of the first changes noticed after x -ray treatments of these parts is a diminution of moisture, and since the x -rays destroy the glands, and I have seen the sebaceous glands change and with them the moisture disappear, it has seemed probable to me that the sweat glands, with possibly the sebaceous glands, were the source of the characteristic moisture of these parts. I also so concluded because the behavior of these cases was in some respects like that of hyperhidrosis treated with x -ray.

Aside from the effects of x -ray on epidermis, hair follicles and glands, some or all of the improvement in the symptoms may possibly be the direct effect on the nerve, as it has frequently been found that the pains of rheumatism and trifacial neuralgia and of malignant growths of such severity as to require frequent use of morphine have diminished and disappeared under the x -ray. Again, the sensation in the parts exposed may be changed—at times here may a partial anesthesia or hyperesthesia for a while; but the fact remains that we have improvement with destruction of the epidermis whether this change be effected by x -ray or caustics.

Experience with x -ray treatment of these cases convinces me that it has a distinct field of usefulness the full extent of which has not yet been appreciated.

One case so treated 24 months ago has had no recurrence of symptoms.

One case remains cured after 20 months.

One case remains cured after 18 months.

Three cases remained free from symptoms for three, four and seven months.

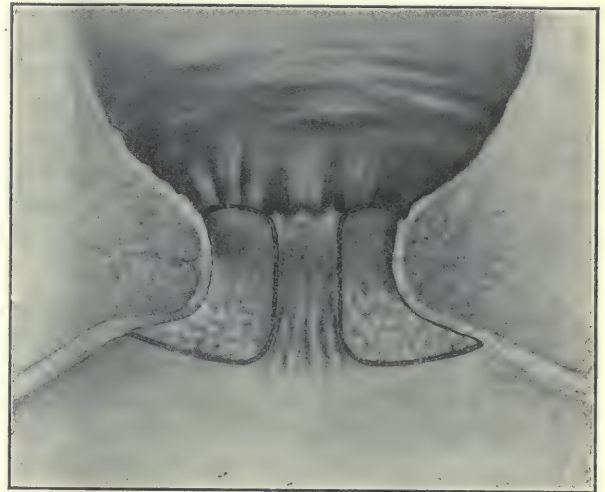
Two cases treated by Dr. Lynch and myself at St. Bartholomew's Clinic were relieved in two weeks and remained free from symptoms for three and six months, respectively, when we lost sight of them.

The writer has also attempted to get rid of symptoms by *excision of a greater part of the diseased skin*. The method of Ball of making a circular incision, dissecting up the skin and sewing back, thus destroying temporarily the nerves, although giving temporary relief, promised little for permanency of cure.

The method of Matthews of excising all diseased

tissue has been practiced a few times, but is recommended for the worst cases—possibly for only cases that could not be relieved by other measures. Since this operation is followed by a scar entirely surrounding the anus which may produce stricture or, if not, may be a constant source of cracks and abrasions—scar tissue not having the elasticity of normal skin—it does not seem wise ever to resort to it.

The method of Dr. H. P. Hamilton of Omaha, seeks to get rid of the diseased skin without troublesome cicatrix remaining. He dissects away the diseased area, elevates the edges of the skin, brings them together in front of and behind the anus and sutures them to the mucous membrane. This should effect a cure where all diseased skin could be so removed.



Author's Operation.—About two years ago I noticed that some improvement of itching followed removal of piles, and that the more extensive the piles removed, the greater the relief. Based on this observation, I began to remove a portion of skin and mucous membrane where pruritus existed without piles, the remaining skin being elevated or separated from subjacent tissues, so as to destroy as much as possible the nerve supply. This operation takes away all the diseased skin except two strips three-eighths to one-half inch wide, selected where the tissue seemed to be least diseased. The outer limit of the incision begins one to one and a half inches from the anus, but this is dissected up so as to include the columns or crypts of Morgagni where there is thickening or abnormality of these. The two accompanying illustrations sufficiently describe the procedure. This operation is a compromise between those of Matthews and Ball. All the skin is not removed so we need have no fear of

stricture resulting. All the diseased skin not being left there is reason to believe that should the itching recur it would not be as troublesome as before.

Another feature is that the remaining strips of skin are stretched and thinned out by cicatricial contraction at the site of the resected portion.

Where the sphincter was much hypertrophied a median incision was made posteriorly, thus cutting the few transverse fibres and separating the longitudinal fibres of the external sphincter for one inch posterior to the anal margin. This incision does not extend as high as the internal sphincter. This was done with the idea of lessening the power of the sphincter and thus diminishing the interference with the return circulation from this area.

This operation can be more satisfactorily performed under general anesthesia. I have performed it, however, under local anesthesia, using one-half of one per cent. cocaine. After operation is completed, denuded surfaces are covered with iodoform gauze and a Lynch modification of Penington tube of small diameter is inserted and retained in place by adhesive strips across the buttocks. Bowels are confined three days by small doses of deodorized tincture of opium. At end of two or three days the tube is withdrawn after irrigating rectum through tube and introducing three ounces of olive oil or cascara or compound licorice powder is given to secure a soft movement. Denuded surfaces heal by granulation in two to four weeks. The parts are irrigated daily and dressed with a five to ten per cent. balsam peru in castor oil. There is little or no pain after tube is removed and patient need not remain in bed longer than three days.

My results have been very encouraging with this operative procedure:

Two cases operated on 18 months and 16 months ago have remained free from symptoms.

One case operated on 13 months ago had a partial return of symptoms after four months.

One case had a partial resection under cocaine 7 months ago. Itching was relieved on that side. Two weeks later the operation was completed by removing skin from the other side under cocaine. This patient was entirely free from symptoms for one month, since which time he has not been heard from.

I have also employed *superficial injections of alcohol* in the treatment of a few cases, in the hope that itching would be as amenable to this form of treatment as pain; nor was there any hesitation to employ alcohol, as the solution would be injected in the cellular tissue, just beneath the skin where only sensory nerve fibers would be encountered. In

the first two cases 30 minims of 95 per cent. alcohol were injected into the anterior quadrant. Three punctures were made at the outer edge of the diseased skin, one in the middle line and one a half inch to either side of the median line, the point of the needle being carried just beneath the skin to the edge of the anus and gradually withdrawn depositing the alcohol. The pain was marked but lasted only a few minutes. Itching disappeared immediately. There was some inflammatory reaction and some superficial necrosis. For each deposit of alcohol there were from one to three perforations of skin following this destructive inflammation. In from three to seven days injections were repeated in a different quadrant, but using a weaker solution, the one employed being the same that Bodine and Keller are using by deep injection for relief of trifacial neuralgia. The formula is:

Cocaine hydrochloride	gr. i
Chloroform	℥x (10 minims)
Alcohol	℥iii
Water	ad ℥iv

This solution, injected the same way, did not produce any necrosis of skin and the pain was only slightly less marked.

One of the above cases was injected in the anterior and posterior quadrants, and since perfect relief resulted no other injections followed. This case had lasted three years, always more or less troublesome, but since the injections there has been entire freedom from itching for three months and twenty days.

The second case was injected in the four quadrants. This gave entire relief for one week, then there was slight recurrence in one quadrant. Another injection of twenty minims was made and perfect relief followed, which has lasted almost three months. This patient was a laborer and for years had been inconvenienced when he would walk much.

A third case was one in which portions of skin had been removed in an operation for piles and the remaining skin elevated. Itching disappeared for six months and then reappeared in a moderate degree only, in the strips of skin that remained. These were injected at one sitting. Itching disappeared and again reappeared after one week when another injection was given and patient has remained free from symptoms for one month.

A fourth case was injected in the posterior quadrant on May 28th. Three days later some necrosis had occurred at the site of two injections. May 31st the injection was repeated in the anterior quadrant. This was a very troublesome case.

Thirty minims were used, as above described. After pain disappeared no itching was present.

These cases have been too few and the results have been of too short duration to be decisive. Reasoning from analogy, however, we might expect recurrence of symptoms after an interval possibly of several months, for alcohol in the treatment of neuralgia is not believed to destroy the nerve but to block its power of transmission of pain. It is possible, however, for results to be more permanent, for injections of alcohol into the sciatic nerve have in some cases produced motor disturbances that have lasted two or three years. When this method is employed it is important not to deposit too much of the alcohol at any one point since this would tend to produce necrosis. Also, as in the treatment of trifacial neuralgia, it is well to realize that injections may have to be repeated several times before symptoms are relieved.

101 WEST 81ST STREET.

SOME ACCIDENTS AND COMPLICATIONS OF GYNECOLOGICAL OPERATIONS.*

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It is a common thing in these days of highly perfected surgical technic to report a large number of satisfactorily operated cases, and to present the specimens derived therefrom. I make no comment upon this routine procedure. It serves a laudable ambition and a laudable purpose. But it has seemed to me that it might not be amiss, for once, to present for consideration, some of the accidents which sometimes mar the perfect work of the gynecologist, and some of the complications which occasionally interfere with the perfect convalescence of his patients. For there is no surgeon, however expert or experienced, who does not sometimes meet conditions which impair, moderately or seriously, the results of his operations, or who is not sometimes the victim of circumstances which bring about a similar outcome.

The great majority of gynecological operations end without untoward results. Many of them are difficult technically, or because of the inherent difficulties attendant upon operations in deep cavities. But with care and with patience these difficulties are usually overcome. Curiously enough, it is frequently in the simplest and easiest of procedures that the complications of which I intend to speak,

arise; on the other hand, some of the apparent technical errors occur in cases of the most difficult operative maneuvers.

Probably the most common accident occurring during gynecological operations is perforation of the uterus with a curette. I doubt that there is any operator to whom this has not occurred. I have seen seven of these cases, one of them occurring in my own hands. The sensation of a curette going through the fundus of the uterus is one which can hardly be described. Of a sudden, the end of the instrument seems to disappear—it becomes lost. If the curettage has been progressing for a while, the cavity of the uterus which has been clearly defined by the curette suddenly seems to give way, and one recognizes that an unusual something has taken place. With the site of the perforation clearly in mind, a skilful operator may finish his operation if it is necessary—as after an incomplete abortion—but he should refrain from irrigation so that the fluid may not enter the abdominal cavity. The uterus may be packed with gauze which should be left in place for two or three days so that the peritoneal coat of the uterus may have time to close over. If the uterine contents for which the curettage was done, were septic, however, the outlook for such a speedy and uneventful recovery is not so good. The procedure here must be different. While, of course, irrigation must be avoided, an opening to provide drainage should be made at once in the posterior fornix. This will be sufficient, as a rule, to provide against disaster.

Of the seven cases I have personally had to do with, all recovered. In only one was a laparotomy necessary. This was a patient who was brought into Mt. Sinai Hospital one hour after a perforation of the uterus with a placental forceps while an abortion was being performed. The physician who accompanied the patient said that he was sure that he had carried down intestine into the vagina but that he had at once replaced it.

To make sure, however, that the lips of the uterine wound did not contain intestine, the abdomen was opened, the wound found free from gut, the very loop which had been seized was identified by the marks of the clamp and found uninjured, the uterine wound was closed and the womb was then cleaned out with a curette. The patient made an uneventful recovery. In two other instances, it was necessary to open the posterior fornix a few days after the operation to provide drainage for a collection of fluid blood which had escaped from the torn uterine edges.

It is quite likely that in some cases the peritoneum

* Read before the Harlem Medical Society, May 5, 1909.

itself is not torn through by the curette, that only the muscle as far as the peritoneum is injured. In these cases, in the absence of symptoms, of course, no abdominal operation is necessary. Let me repeat that in a clean case in which the operator has been sure of his own asepsis, his patient will make a very good recovery if nothing further is done than to pack the uterus.

The next most common accident of an unforeseen character is hemorrhage from any cause. This may be as fruitful a source of anxiety if it is extra-abdominal as if it is intraabdominal. Three fatal cases of intraabdominal operative hemorrhage have come under my notice. One was from the slipping of a ligature from the stump of the mesentery of the appendix, one from the slipping of a ligature on the uterine artery following a hysterectomy, and one from a general oozing after an attempt to extirpate an hematocele following a ruptured tubal pregnancy. While these are accidents which may befall any operator they are none the less most harrassing when they do occur. The only safeguard one can employ is constant care in the fastening of his ligatures and the precaution never to close the abdomen until he is certain that all oozing and bleeding have been stopped. Even with all the usual and unusual precautions every operator of some years' standing will have a few of these sad cases to his credit.

But there are other sources of hemorrhage than the slipping of ligatures from bloodvessels. Rents in the broad ligament from excessive traction or from perforation by an instrument may give rise to profuse bleeding, and it is not at all uncommon for vascularized adhesions to bleed so severely that only very tight packing or the passing of deep sutures will control it. Oozing surfaces on tumor masses or from the cut edges of the cervix in abdominal hysterectomy may cause a great deal of trouble.

In the performance of operations for cystocele in which the bladder is pushed back to reduce completely the prolapse of the organ, it is a very common incident for the veins at the base of the bladder to be torn through, causing an amount of bleeding that may at times become alarming. I have seen more than once, half an hour consumed in controlling by suture, ligature or pressure, these troublesome vessels. In one instance, a secondary hemorrhage was so severe that the patient had to be reoperated upon the same night, subsequently having another operation performed. The same thing holds true of the vessels overlying the rectum which during a rectocele operation or one for lacerated perineum, may occasion almost uncontrollable hemorrhage. But the most serious hemorrhages, I

believe, come from arteries in the cervix which are incised or torn in the performance of a trachelorrhaphy. These are not so difficult to control when the cervix is freely movable, and can be brought within reach of the needle-holder. But given a cervix that is not movable, in a vagina that is very narrow and very deep, and it may well give the operator some alarm until he has succeeded in effectually stopping the bleeding.

One of the most peculiar experiences I have had occurred a few months ago. The patient was a lady who four years previously had been operated upon for a cystocele and a rectocele. The latter operation was successful, the former not. At her urgent request, I consented, against my will, to operate in her home, for I feared some complication on account of the large amount of scar tissue present. Nothing was undertaken except the correction of the cystocele. It was not an easy operation on account of the scar tissue and I encountered a great number of newly formed bloodvessels. It was necessary during the operation to draw the left vaginal flap strongly to the left to permit me to catch a spurting vessel. The operation was concluded in about twenty minutes, and while cleaning out the vagina, it was noted that the posterior fornix was full of blood. This was a little mystifying as the posterior vaginal wall had not been touched. As soon as the vagina was mopped out it would again fill with blood. Finally, way up in the left lateral fornix a small rent in the vagina was found. This was packed with iodoform gauze and the bleeding seemed to stop. I remained with the patient for nearly an hour but had barely reached my home when I was hastily summoned, to find her lying in a pool of blood, practically exsanguinated. Packing was useless, so I removed her at once to the hospital, where with really infinite difficulty, I succeeded in passing three silk sutures through the rent in the lateral fornix which, it appeared, went up to the peritoneum. Her convalescence, after a stormy day or two, was uneventful. The manner of this accident was not at all clear at first. But I am now certain that the great strain put upon the left flap of the anterior vaginal wall during the operation, was transmitted downward and was responsible for the tear in the left lateral wall and the subsequent hemorrhage.

Another intraabdominal condition which occasionally leads to serious bleeding is a papillomatous condition of the ovaries with implantation of the growth upon the peritoneum and intestine after it has burst through its capsule. The attempt to remove all the tumor mass sometimes leads to severe,

almost uncontrollable hemorrhage. The same thing holds true of the effort to remove the placenta in cases of abdominal pregnancy. The placenta becomes adherent to intestine, omentum and peritoneum and forms strong vascular connections. Spread out as it is over a large area, the attempt to remove it may result in fatal hemorrhage. It is therefore considered the better technic to leave the placenta *in situ*, to marsupialize it and to drain, unless it appears that it can be easily shelled out of its bed.

An unusual incident occurred to me illustrating the constant preparedness with which the surgeon must work. I was operating for an extra-uterine pregnancy on the right side in which the ovum had already been extruded through the fimbriated end of the tube. As soon as the abdomen was opened and the intestines packed out of the way, I passed my hand into the right side of the pelvis, seized the affected tube and drew it gently toward the wound. This had been barely accomplished, when the entire tube tore away from its insertion into the broad ligament. For a moment there was a profuse hemorrhage which was controlled at once by the placing of a few clamps. The explanation is simple,—the parts were so exceedingly friable that the slight tension I exerted upon the broad ligament was sufficient to cause its rupture.

Among the more serious accidents are those occurring to the bladder and ureter in the course of various procedures. The ureter may be ligated in the course of an abdominal or vaginal hysterectomy,—in the latter instance only when the bladder is not sufficiently pushed out of the way—during the removal of intraligamentous growths or severe inflammatory products which involve many organs or dip down deep into the broad ligament. Or it may be that only a section of the ureter in its longitudinal axis may be included in the ligature. Whatever the actual injury to the ureter, the end result is usually the same, the creation of a fistula. However careful and conservative the operator, this particular accident is occasionally bound to occur. Fortunately, it is not usually attended with fatal results. Sometimes the fistula closes spontaneously, especially if the ligature is of catgut, as Martin has pointed out. Or, it lends itself readily to a corrective operation, or a hydrops of the kidney develops which ultimately leads to its atrophy. Sometimes, indeed, infection of the urinary tract on the affected side takes place and then it may become possible that the kidney and its ureter may have to be removed.

Injuries to the bladder may occur in vaginal

operations or during the performance of a hysterectomy. In the former case, as in a cystocele operation, the finger or an instrument may be pushed through the bladder wall. Usually all that is necessary is to repair the wound. An abdominal injury to the bladder may be more serious. I have seen one case at autopsy. An abdominal hysterectomy for carcinoma of the cervix had been performed. During the amputation of the uterus the bladder wall was evidently incised with the scissors and the injury was apparently not recognized, for at the post-mortem examination the pelvis and its structures were infiltrated with urine, while it was evident that much more must have escaped by way of the vaginal packings which were still in place. Another instance was one in which the bladder was drawn high up on the anterior surface of the uterus which contained half a dozen fibroids. This is not very uncommon, but in this case the bladder was nearly at the umbilicus, and when the peritoneum was reached the bladder was incised for about an inch. It was at once closed and gave no subsequent trouble.

It remains for me only to speak of intestinal injuries. These may arise when the peritoneum is first opened, a loop of intestine—almost always the small intestine—being grasped by the forceps which is putting the peritoneum on the stretch. This is often nothing but a mere nick and can be easily repaired without having caused or causing damage. Or it may be, that owing to an inflammatory process or the result of a previous peritonitis, the intestine is adherent to the parietal peritoneum. It may not then be possible to open the abdominal cavity without causing some injury to the gut. Much more serious, however, are the injuries to the intestine arising from the separation of the gut bound by dense adhesions to the bladder, uterus, tubes or ovaries or to all of them. These results of inflammatory conditions make the intact separation of the intestine at times impossible or impossible, at least, without leaving attached to it some of the diseased tissue, a method, indeed, which is followed by most operators. Sometimes the gut is so adherent to tumors, however, or forms such an integral part of the tumor mass, that its resection becomes a matter of necessity. While this is no accident, it complicates the character of the operation very seriously.

I shall not go into the particular complications which sometimes follow individual operations, such as failure from one cause or another of plastic operations, intestinal obstruction from bands, recurrence of uterine displacements, mental disturbances, etc., etc. But I shall touch upon a few of

the commoner sequels occurring immediately after operation. Once in a while, if the operator is not careful of his hemostasis, there will be some oozing into the abdominal or vaginal wound, with the result that an hematoma is formed. This may or may not require opening, depending upon its size and its freedom from infection. Whether it requires opening or not, it is an annoyance to the patient and to the surgeon. There may even be an intraabdominal oozing which may require an incision into the cul-de-sac of Douglas. When this does occur it is usually from omental bleeding or oozing from a tumor mass. Occasionally a patient will vomit so severely that a strain of unusual intensity is placed upon the sutures, which finally give way and the wound bursts open. It may not open any further than the fascia or the peritoneum may become exposed. A hernia is the invariable result, or the wound may become infected. As this is one of the bugbears of surgery, every operator has devoted thorough study to its avoidance. And yet it occurs in the best regulated households from time to time. I have often thought that to infect a vaginal wound, the infecting organism must be rather virulent, since the vagina withstands so many sources of infection. But be the infection mild or not, it mars the effect of the operation to some extent.

An intraabdominal condition which certainly gives rise to anxiety, although not always serious, is the post-operative formation of exudates. Coming on with fever, an increased pulse and all the signs of an acute infection, the diagnosis may be in doubt for a few days or hours. But presently the characteristic mass can be detected and unless a suppurative process starts, the exudate gradually disappears, leaving, however, some adhesions which may remind the patient of her operation for a long time to come. I am not referring now to the so-called "stump exudates" which form about the stumps of pedicles. These represent an aseptic pouring out of plastic lymph and give rise only to a sensation of pain on pressure, and not always even to this.

I could go much further into the subject than I have done, and could include phlebitis, acute dilatation of the stomach and other serious post-operative conditions, but my purpose was only to touch upon some of these themes. I have said enough, I think, to show that we can never promise our patients too little in the way of operative results, that we should always be conservative in our prognosis and that we should be unremitting in our efforts to make our surgery as safe as it is possible for us to do.

136 WEST 85TH STREET.

THE UTILITY OF THE VAGINAL DOUCHE.

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The utility of the vaginal douche depends on the axiom that living, flowing blood cures disease. The apparatus through which the vaginal douche accomplishes the hyperemia or its result is the *genital inosculature circle*. The method of applying the therapy through the vaginal douche is by excessive or exaggerated physiology—*i. e.*, by congestion of the genitals. An *inosculature circle* consists *anatomically* of a vascular arc, automatic nerve ganglia and peripheral viscus. The genital inosculature circle is the utero-ovarian artery. The automatic nerve ganglia of the genital inosculature circle are what I termed some fifteen years ago the "automatic menstrual ganglia." An inosculature circle consists *physiologically* of a vascular arch which by dilating and contracting congests and decongests the peripheral viscus. The peripheral viscus and inosculature circle are connected by "straight terminal vessels" (*rami genitales*). The stimulation of the automatic nerve ganglia located on the arc of the genital inosculature circle engorges the peripheral viscus, initiating and sustaining genital function (sensation, peristalsis, absorption, secretion, ovulation, menstruation, gestation). Stimulation of the automatic menstrual ganglia located on the genital vascular arc produces the congestion of menstruation—a blood flow oozing from the genitals—and also the profound engorgement of gestation. The utility of the inosculature circle consists in controlling maximum blood volume for the purpose of engorging peripheral viscera. The stimulation of the genital inosculature circle by the hot vaginal douche increases the quantity of blood flowing through the genitals—and blood cures disease. Maximum engorgement of the peripheral viscus results in maximum visceral elimination, drainage. During the vigorous employment of the vaginal douche its stimulation produces premature appearance of menstruation. The vaginal douche may be safely employed during the first months of pregnancy to enhance the blood supply of the uterus and nourishment of the fetus. The stimulation of any segment of the automatic nerve ganglia of the inosculature circle functionates or engorges its entire circumference. The stimulation of the peripheral viscus of the inosculature circle hyperemizes, congests, engorges the peripheral viscera—as by menstruation, the fetus in gestation, a myoma in the uterus, intrauterine pessary, vaginal tampon, massage, electricity, copulation.

The favorable therapeutic utility in the employment of the intrauterine stem pessary (rubber, gutta-percha, metal) rests on the rock and base of its stimulation introducing hyperemia, congestion, engorgement of the peripheral viscus (the genitals). The rational therapeutics of the inosculatation circle is *visceral* drainage (administration of ample fluids at regular intervals) which produces maximum visceral hyperemia and maximum visceral elimination.

A. The fountain syringe *reservoir* for the vaginal douche should be of 12-quart capacity. The simplest and most economical vaginal syringe is a 12-quart wooden pail.

B. The *location* of the syringe should be four feet above the patient.

C. The *quantity* of fluid administered in the beginning should be 2 quarts for patients unaccustomed to its use, and 4 quarts for those accustomed to its use. The quantity should be increased a pint at each administration to 12 quarts.

D. The *temperature* of the douche should be 105° in the beginning and increased one degree at each administration until it is as hot as it can be borne (115 to 120°).

E. The *duration* of the douche should be 10 minutes for each gallon.

F. The *time* to administer the douche is in the evening immediately before retiring and in the morning (after which the patient should lie horizontally for 45 minutes).

G. The *position* of the patient should be on the dorsum.

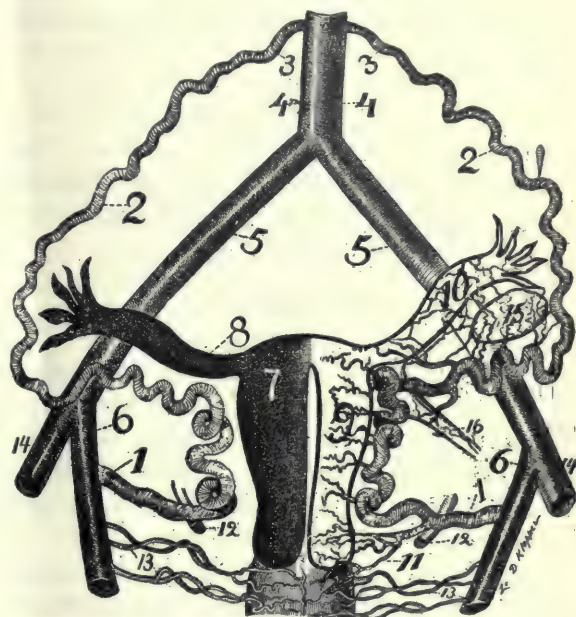
H. As to the *method* of administering the douche the patient should lie on a sufficiently inclined plane to allow the returning fluid to drain into a vessel (pail, pan). The ironing board, wash-tub, or board resting on the bath tub conveniently serves the purpose. The douche should not be administered in the bed (unless ordered) nor in the standing or sitting posture or on the toilet seat.

I. As to *ingredients* a handful of sodium chloride (NaCl) and a half teaspoonful of alum should be added to each gallon, the sodium chloride to dissolve the mucus and pus, to act as a natural antiseptic and to prevent reaction. The alum is to astringe, check waste secretions and indurate tissue.

J. The *vaginal tube* employed in administering the douche should be sterilized, boiled, and every patient should possess one. The most useful vaginal tube is the largest that can be introduced or the one that distends the vaginal fornices the greatest, so that the hot fluids will bathe the widest surface area of the proximal or upper end of the vagina—the

most adjacent to the uterine vessels (arteries, veins, lymphatics).

K. The *utility* of the vaginal douche is: (a) it stimulates contraction of tissue (muscle, elastic and connective); (b) it stimulates the contraction of vessels (lymphatics, veins and arteries); (c) it absorbs exudates; (d) it checks secretion; (e) it is a stimulant; (f) it relieves pain; (g) it cleanses; (h) it checks hemorrhage; (i) it curtails inflammation; (j) it drains the tractus genitalis. The use-



The Utero-Ovarian Artery—The Genital Inosculatation Circle.

Fig. 1. The utero-ovarian artery (1, 2, 3) is a typical inosculatation circle, the genital inosculatation circle consisting anatomically of a vascular arc (1, 2, 3), automatic nerve ganglia (automatic menstrual ganglia, and pelvic brain) and peripheral viscera (uterus, oviduct, ovary). Physiologically the object of the genital inosculatation circle is to congest (engorge) its peripheral viscera. The genital inosculatation circle is functionated by stimulating (by vaginal douche, intra-uterine stem pessary) its automatic nerve ganglia which dilates the circle and congests, engorges its peripheral viscera. The genital inosculatation circle is engorged by stimulating its peripheral viscera as by menstruation, the fetal ball, a myoma within the uterus, an intrauterine stem pessary, vaginal tampon, massage, electricity.

fulness of the vaginal douche depends on the quantity of fluid, the degree of temperature, its composition, the position of the patient during administration, and on systematic methods of employment.

L. *Disinfectants* in a vaginal douche are secondary in value to solvents of mucus, pus, leucocytes (sodium chloride).

M. The *objects* to be accomplished by a douche are: (a) The dissolving of the elements in the discharge, as mucus, pus and leucocytes; (b) the mechanical removal of the morbid secretions, accumulations, and foreign bodies; (c) antiseptics; (d) diagnosis.

N. The *requirements* of a douche: (a) it should be non-irritating; (b) it should be a transparent

solution; (c) it should possess solvent powers of pus, and especially mucus; (d) it should be continued for months; (e) it should be omitted for three days during menstruation.

O. A vaginal douche given according to the above directions, will prove to be of therapeutic value, in the treatment of pelvic disease, a prophylactic agent, and a comfort to the patient.

P. The vaginal douche is contraindicated in subjects with oviductal gestation or acute pyosalpinx (as it is liable to induce rupture of the oviductal wall), abortion or leakage of pus through the abdominal oviductal sphincter.

SURGICAL TREATMENT OF RETRODISPLACEMENTS OF THE UTERUS.*

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Displacement of the uterus as a distinct entity is met with in perhaps one-third of the cases seen in practice. It usually exists as a factor in or more often as a result of associated conditions which are more or less apparent as the individual case is made the subject of casual or careful study.

The organ, when in its normal position, is suspended in the pelvis by the broad ligaments, the fundus lying forward and the cervix backward toward the hollow of the sacrum. It is very mobile and responds readily to slight pressure from above or below, and thus readily accommodates itself to the varying conditions of the adjacent viscera, being pushed downward by pressure from above, so as to assume a position of temporary anteversion, while force from the opposite direction may cause the fundus to rise with equal readiness to a point which amounts to retroversion.

To insure resumption of normal conditions when these temporary deviations occur, there are other ligaments which then come into play. These are the round ligaments which are practically extensions of the uterine muscular tissue, so prolonged that they pass out through the inguinal canal and find attachment to the pubic bone. The uterovesical and the recto-uterine reflections of the peritoneum also exert a retentive influence upon the uterus to a minor degree.

When a retrodeviation is unduly protracted these correcting or retaining media may become so

stretched or relaxed that they are no longer able to influence the return of the organ to position, or even to retain it after it has been replaced by manual or other measures. It sometimes happens also that the uterus is suddenly thrown into an extreme degree of backward displacement, past the point of greatest stretching of the round ligaments, and, as their elasticity has not been overcome, they then act as an aid in perpetuating the abnormal position. These cases are generally the result of traumatism, such as a fall from a horse or swing, and are often relieved by reposition of the organ and the use of some retentive measure for a short time, because the functioning power of the ligaments has not been destroyed by long-continued over-stretching.

There are cases of uncomplicated displacement which exist in individuals who do not show evidence of impairment of the general health, and where the condition seems to be natural to the physical characteristics of the individual, and is not associated with symptoms other than perhaps those of a neurasthenic or neurotic type. In such cases the local condition does not call for treatment, and it is better for both patient and physician if it be ignored.

When, however, the displacement is accompanied by backache, leucorrhea, vesical irritation, constipation with its associated ills, dysmenorrhea, menorrhagia, or other catamenial abnormality, it demands treatment not so much because of the perverted position in itself as of the inroads the accompanying conditions make upon the general health and it may be accepted as a rule that restoration of the uterus to its normal position and the use of retaining measures in addition to removal of existing complications will, by the improvement which follows in the local circulation and the relief afforded to perverted nerve influence, be the first, most important and most logical step in the correction of these distressing complications.

There is another condition which is sometimes cured by correcting displacement of the uterus, especially retroflexion, and that is sterility, particularly when there are no complicating features.

Treatment of this condition may be in the way of reposition of the organ in uncomplicated cases and using a pessary or some other form of supporting measure, with the object of giving the stretched and devitalized retentive ligaments time to regain their normal strength and elasticity. Such treatment is and must be regarded as being merely palliative in the great majority of cases, however, and resort to

* Read before the Western Surgical and Gynecological Association, December, 1908.

surgical measures is necessary to effect a cure that is in any degree permanent.

The operations in vogue for effecting retention are dependent upon two principles: One is suspension of the organ from the peritoneal lining of the anterior abdominal wall, and the other is by shortening the normal supports of the uterus, particularly the round ligaments, so as to render them again effective. The round ligaments are either shortened in the inguinal canal, by what has become known as the Alexander method, or intraabdominally, when the excess of length in the ligaments caused by over-stretching is taken up in loops and retained by sutures near the uterus.

I have not favored ventrosuspension as a retentive measure for the theoretical reason that in so doing we are depending upon artificial means, which not only ignore the normal supports, but put resumption of function on their part out of the question, and I have not practiced it except in a few instances, where other methods seemed inapplicable, and when the child-bearing prospects of the patient were no longer a factor.

Whenever it has been feasible to do so, I have preferred to shorten the round ligaments because the method has appealed to me as being more in accord with physiological principles, inasmuch as it retains the normal uterine supports and restores their functional integrity. It has also been my aim to make the shortening in such a way as to retain, as nearly as possible, the original position of the ligaments, so that the line or axis of their retaining influence is not changed, as altering their position or changing the direction of traction must, it seems to me, lessen their functional activity when called into play.

It is often difficult and sometimes impossible to determine the degree of uterine mobility with certainty without the aid of an anesthetic, and, as the knowledge may be of great importance in determining the course to be taken to effect retention, I am in the habit of deferring decision in doubtful cases until the patient is anesthetized for operation, when I examine her once more to determine what character of procedure is best calculated to conserve her interests. If at this time the uterus is freely movable and the adnexa show no signs of disease, and no other condition exists which makes opening the abdomen advisable, the ligaments should be shortened in the inguinal canal by the Alexander method, because the after-condition of the patient is likely to be better, all things considered, if the peritoneum has not been molested. If there is any uncertainty, however, as to the absolute

mobility of the uterus, the abdomen must be opened and the restricting influences of whatever nature must be overcome, or they will render any attempt to retain the organ in position nugatory. When the adhesions have been freed and reposition effected, the ligaments may be shortened, so as to secure retention by folding them upon themselves and including the excess in sutures.

My method of doing this, in accordance with the principles already mentioned of preserving the position and the direction of traction of the round ligaments, is, having the patient in the Trendelenburg position, to catch each ligament with a tenaculum at a point of from one to one and a half inches from its uterine end, depending upon the amount of slack found, and drawing them forward until they are slightly tense, when it will be noticed that they lift the peritoneum which covers them so that the vesico-uterine fold forms a sort of sulcus running from the bladder to the uterus. There is a redundancy of peritoneum between the raised ligaments, owing to the stretching it has undergone, which I draw together from side to side, folding it upon itself and retaining it by a fine running catgut suture, beginning at the bladder and following backward until the round ligaments are reached, thus making this peritoneal fold a factor in retention. A No. 0 chromic catgut suture is then passed through both segments of one ligament and securely tied, so as to fold the excess upon itself, forming a loop, taking pains to pass the suture so that the lower segment will be drawn up to the point where the ligament is attached to the uterus, thus preserving its direction of traction as well as its position. After the other ligament is treated in a similar manner, the two loops are folded over upon one another and fastened together as well as to the anterior surface of the uterus.

While the technic is slightly different, the therapeutic principles involved are essentially the same as in the procedures of Wylie, Webster, Coffey and others, inasmuch as they all utilize the peritoneum to a greater or less degree as an adjunct, and aim to restore the function of the round ligaments by taking up and disposing of their excess in length in such a manner as to reinvest them with a part at least of their original integrity but I think that attention to the details of the operation with the view of preserving the normal direction and degree of traction of these ligaments is a very important feature, as it restores their functional activity to the physiological degree, and the uterus is mobile at an early date after the operation, which is certainly a most desirable condition for the patient.

Coffey states, as the result of personal observation, that the round ligaments when included in a series of absorbable sutures together with their peritoneal covering, gradually free themselves from the strictures which form as the result of adhesions of the peritoneal surfaces to each other, and regain their elasticity, so that, in time, they become able to perform their usual function, and my experience would tend to confirm his conclusions.

The reports have been so favorable that I have come to regard the procedure as one from which I can expect definitely good results, and not be troubled by fears of failure, because the operation when made in this way is almost universally applicable; it is safe and easy to perform, and uterine reposition is definite and permanent, and, as the object of the procedure is restoration of the original normal conditions, it is found that relief to the patient is prompt to follow, and disappearance of the distressing symptoms is the rule; and, after all is said, symptomatic relief is the most reliable test of the value of an operation of this character.

FRACTURES OF THE RADIAL SHAFT. ROTATION DEFORMITY (OCCURRENCE AND DIAGNOSIS) AND ALUMINUM PLATES.*

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In a recent study of 368 cases of fractures of the forearm observed in the out-patient department of St. Luke's Hospital, the shaft of the radius was found to have been broken 86 times. The comparative frequency of impaired rotation of the hand as an end result in these cases led to the attempt to discover a means to foresee and prevent this disability.

A loss of supination of the hand after fracture of the shaft of the radius is due to one or more of the three following factors:

1. Cross-union where both radius and ulna are fractured at the same level.
 2. Diminution of the interosseous space by approximation of radius to ulna.
 3. Faulty rotation of the upper radial fragment upon the lower by muscular action.
1. The liability to cross-union between the

bones seems to have been overestimated. Callender¹ mentions that among the many specimens to which he had access in London hospital museums and among those mentioned in the literature, but four cases showed cross-union of the shafts. It has not been observed by the writer.

2. Where either of the radial fragments is drawn close to the ulna the resulting diminution of the interosseous space may interfere with rotation after union, since during rotation of the forearm the bowed radial shaft must be free to recede to some distance from the ulna. (Figs. 1, 2, 3 and 6.)



Fig. 1. Approximation of Upper Fragments. Fracture of Radius Above Insertion of Pronator Teres. Faulty Rotation of Upper Radial Fragment.

3. One reason for the too commonly seen impairment of the function of supination after fractures of the shaft of the radius would seem to be the routine custom of immobilization with the hand semiprone. It is evident that after union occurs with the hand semi-prone or prone while the upper fragment of the fractured radius is already supinated by muscular action, it will be impossible to supinate the hand. *When the fragments have united in such a faulty relation to each other every degree of rotation of the upper fragment upon the lower is a degree of rotation lost to the limb below.*

This unique rotatory function of the human radius is associated after fracture with certain results which repay study. Impairment of supination is a serious disability. The natural movement is but badly compensated for, when lost, by an awk-

* Read before the Surgical Section of the New York Academy of Medicine, May 7, 1909, and before the West Side Clinical Society, May 6, 1909.

ward motion from the shoulder, with bending in of the elbow.

Anatomy.—The muscles of salient importance concerned with rotation of the radius are the following: The biceps exerts a powerful supinating effect on the radius through the tuberosity at its upper end. The broad supinator brevis folded around the upper end of the bone not only supinates the upper fragments of a broken radius, but also tends at times to draw it and the ulna together.

Opposed to the action of these two muscles is the pronator radii teres descending obliquely across the

with fracture in any part of the shaft. (Figs. 1, 5 and 6.) And the effect of muscular action in producing deformity is erratically manifested and sometimes is lacking, as in figure 7.

Lonsdale², in 1838, advocated the supine position in the treatment of all cases of fracture of both bones of the forearm in which the point of fracture of the radius was above the insertion of the pronator teres muscle, and a respectable number of authorities have followed his example. But of late years few writers or teachers, so far as has been ascertained, have used any other than the semi-prone

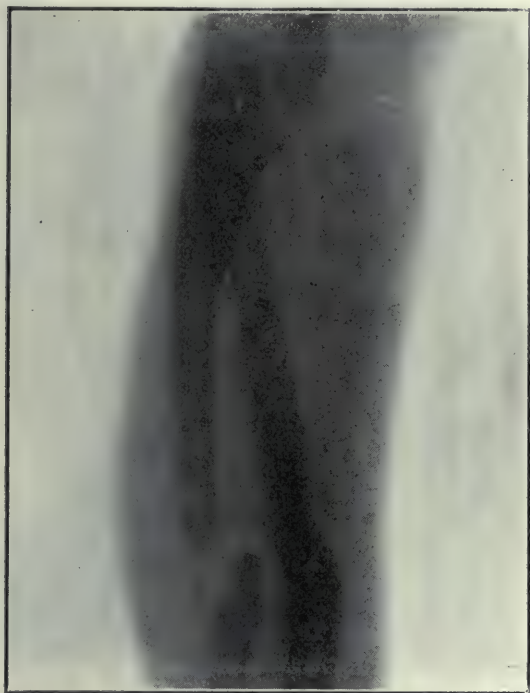


Fig. 2. Approximation of Fragments and Narrowing of Intersosseous Space. Non-Union of Ulna Owing to Interposition of Soft Parts.

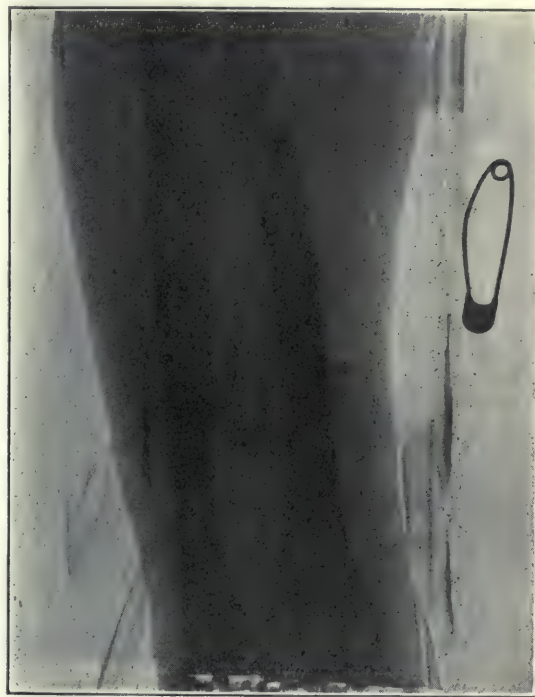


Fig. 3. Narrowing of Intersosseous Space. Fracture (Comminuted) of Radius Above Insertion of Pronator Teres Without Demonstrable Faulty Rotation of Upper Fragment.

anterior surface of the forearm and inserted at the middle of the convexity of the bowed shaft of the radius. This muscle seems to have received an undue amount of consideration as an opponent to the action of the above mentioned upper supinators. It has been commonly maintained that faulty rotation of the upper fragment occurs only in those cases where the fracture is above the insertion of pronator teres, while in breaks below the middle of the radius the strong pull of the pronator teres would overcome the tendency to supination by the biceps and supinator brevis. Hence the practice advocated by some, of treating all those cases of fracture of the radius occurring above the insertion of the pronator teres muscle by immobilizing the forearm in supine position. But it will be shown that faulty rotation of the upper radial fragment may occur

position, although Hamilton³ and others admit the frequent occurrence of rotatory disability. The maintenance of full supination in a splint is uncomfortable to the patient, and this may be one reason for its unpopularity, especially since there has been no certain way heretofore of determining whether or not faulty rotation of the upper fragment were present until after union had occurred.

The attempt will be made below to describe a method whereby the presence or absence of faulty rotation in the living bone may be demonstrated. If this can be done, it would seem to be the duty of the surgeon to individualize these cases which come under his care and treat them according to the specific indications present instead of depending upon a routine practice which may or may not be applicable in any particular instance.

As will be shown, it is not uncommon to find supination of the upper radial fragment while the lower remains semi-prone, even where the fracture has occurred below the middle of the bone. Details concerning this point are given in the table, which was compiled from the skiagrams forming the basis of this paper.

TABLE SHOWING OCCURRENCE OF FAULTY SUPINATION OF UPPER RADIAL FRAGMENT.

No.	Patient.	Age.	Supination of Upper Radial Fragment.		Location of Fracture.
			Present.	Absent.	
1	B.	?	I	..	Lower third.
2	F. B...	15	I	..	Upper part of middle third.
3	G. M...	9	..	I	Lower third.
4	W. H...	5	..	I	Lower third (green-stick).
5	D. V...	13	..	I	Lower third.
6	N. S...	12	I	..	Junction middle and upper thirds.
7	J. F. R.	20	I	..	Junction middle and upper thirds.
8	E. T...	7	..	I	Lower third.
9	R. T...	10	..	I	Junction middle and lower thirds.
10	C.	8	..	I	Lower part of middle third.
11	J. N...	25	I	..	Lower part of middle third.
12	M. M...	17	I	..	Upper part of middle third.
13	W. C...	66	I	..	Junction of middle and lower thirds.
14	T. K...	11	..	I	Lower part of middle third.
15	E. K...	14	..	I	Junction of middle and lower thirds.
16	G. I...	11	..	I	Lower third.
17	W. B...	14	..	I	Lower third.
18	N. L...	32	..	I	Lower third.
19	M. McM.	12	..	I	Lower third.
20	E. T...	11	I	..	Upper middle third.
21	F. P...	13	..	I	Junction middle and lower thirds.
22	H. C...	?	I	..	Upper third.
23	T. H...	?	I	..	Upper third.
24	X. M...	19	..	I	Upper middle third.
25	H.	13	..	I	Upper part of middle third.
26	J. F...	?	I	..	Middle of bone.
27	Y.	30	..	I	Middle third.
28	M.	?	..	I	Lower third.
29	C.	9	..	I	Lower third.
30	W. B...	68	I	..	Lower third.
31	W. F...	6	..	I	Middle of bone.
32	C.	44	I	..	Junction lower and middle thirds.
Total.....			13	19	

It will be seen from the table that supination of the upper radial fragment was present in 13 out of 32 cases of fracture of the radius alone or of both bones of the forearm. On examining the table further it is found that of the thirteen bones which showed faulty rotation seven were broken above the end of the pronator teres muscle, five below it, and one in the exact center of the shaft, and hence among the fibers of the tendinous insertion of that muscle.

Up to the present time the only reported cases in which faulty rotation of the upper radial fragment could be demonstrated to the eye have been those of specimens from the cadaver. Yet it is quite possible by the suitable use of skiagrams to demonstrate

this supination of the upper fragment. Not only may rotation of a fragment of the radius be thus made evident, but the shafts of other long bones may be examined in the same manner. Figs. 8 and 11 show rotation of the fragments of the humerus and a similar condition may often be demonstrated in other long bone fractures. Such demonstration should not be attempted, it is true, by alone observing the general contour of the bone and comparing it with its sound fellow. The method depends upon the fact that the shaft of the radius (or in fact any other long bone) is not truly cylindrical. The



Fig. 4. Old Fracture of Radius and Ulna With Faulty Union. Approximation of Fragments.

radius is flattened from before backward and has a projecting inner border through the greater part of its length. Thus its diameter from side to side is considerably greater than is its antero-posterior, at any point between the bicipital tuberosity and its lower end. (Fig. 9.) In the case of infants the cross-section of the shaft of the radius is much more nearly circular, and hence it is not easy to demonstrate rotation in patients under three years of age.

A draughtsman's compass or fine calipers is used to measure the diameter of the upper and lower fragments of the fractured radial or other shaft as closely as possible to the point of fracture. Differences of diameter not grossly apparent to the unaided eye are made readily evident in this manner, and when found they betoken the twisting of one fragment upon the other. If one fragment be

displaced so as to lie much nearer the sensitive plate than the other its diameter will, of course, appear smaller, since the angle subtended with the point of origin of the Roentgen rays will be less, but where it is suspected that such a circumstance might mislead it is easy to verify or disprove the correctness of the observation by applying the measurement as well to another skiagram taken at right angles to the point of view of the first. (Fig. 5.) Both antero-posterior and lateral aspects of the frag-

Lonsdale², Callender¹, Flower and Hulke⁴ and Agnew⁵, after examination of museum specimens of united fractures of radial shafts, have found the lower fragment to be frequently much less supinated than the upper. Callender, whose material was derived from the hospital museums of London, wrote in 1865: "In eighteen specimens of fracture of its [radius] shaft * * * there are but three in which good union has resulted. The fault * * * is invariably that the upper fragment has been

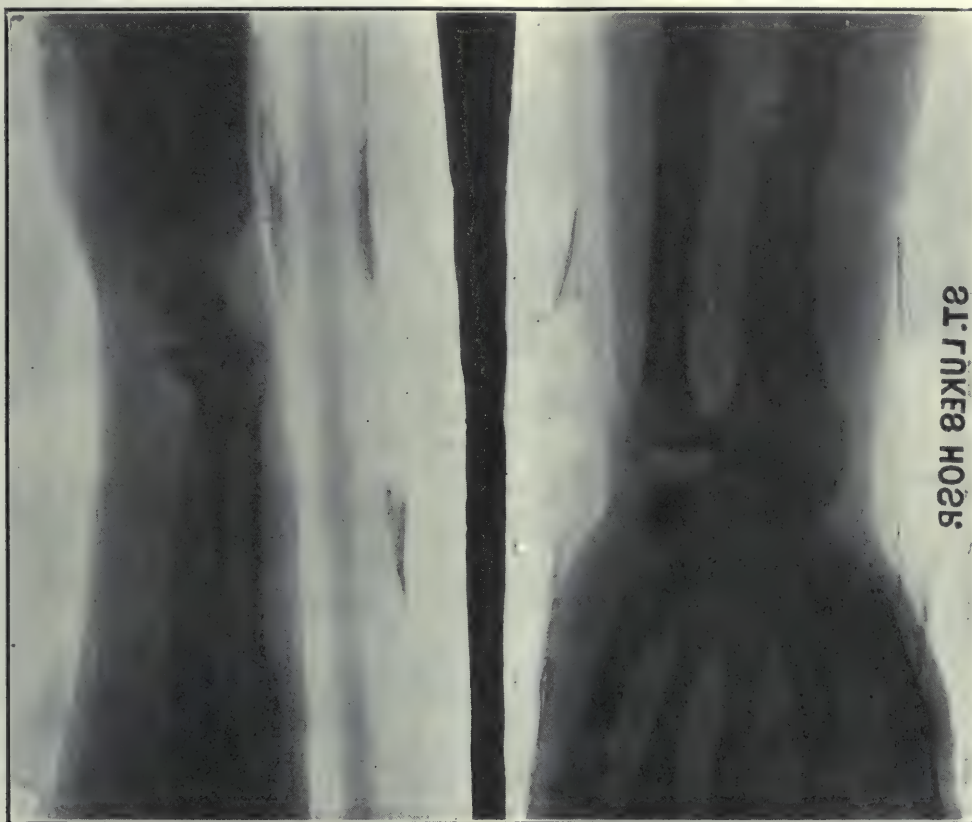


Fig. 5. Faulty Rotation of Upper Radial Fragment With Fracture Below Insertion of Pronator Teres Muscle. Lower Fragment Broader in Antero-posterior Skiagram; Narrower in Lateral View.

ments under examination should agree in showing rotation before it can be said surely to exist. If the broken end of the rotated upper fragment appears broader than the lower in one skiagram it will appear narrower in another taken at right angles to the first. If the skiagram be taken from before backward with the forearm in supination, a fractured lower fragment will appear broader on the negative than the upper one. (Figs. 1 and 5.)

The narrow appearance of the lower fragment in figure 6 as compared to the upper is due to the fact that the skiagram was made with the forearm between pronation and supination, and the lower fragment was turned partly to show its narrower diameter. The supinated upper fragment shows the lateral or larger diameter.

allowed to rotate on its long axis." The present writer has seen a considerable percentage of cases of fractures of the shafts of both bones and of the radius alone followed after union has occurred by more or less loss of supination of the hand. The end results generally in these cases have been far from satisfactory.

The complacent attitude of those who claim uniformly good results from treatment by any routine method is hardly justifiable in the writer's humble opinion. Recollections of results in the past and general impressions unaided by carefully compiled reviews are apt to be misleading. No doubt a candid analysis of end results in these cases treated according to any routine method would show a considerable percentage of patients left with impaired

supination of the hand. The treatment should be varied according to the individual requirements. The day of routine practice in the management of fractures is past as much as it is in the case of any other ailment. Where the *x*-ray is accessible, every patient with a fractured bone is entitled to its aid for the determination of the proper treatment by the surgeon.

The answer to the question of the advisability of operation will depend, as it always has, upon individual experience and judgment. Some will always

overlapping, angular deformity or long delayed union make the end result a matter of doubt. Surprisingly good functional results have been obtained where marked deformities appear in the skiagram, it cannot be denied. Arguments for and against the operative treatment of fractures are actively exchanged by their respective adherents, and surgeons whose opinions command respect are arrayed on each side of the question. Among the disadvantages attending open operations, the following are cited:

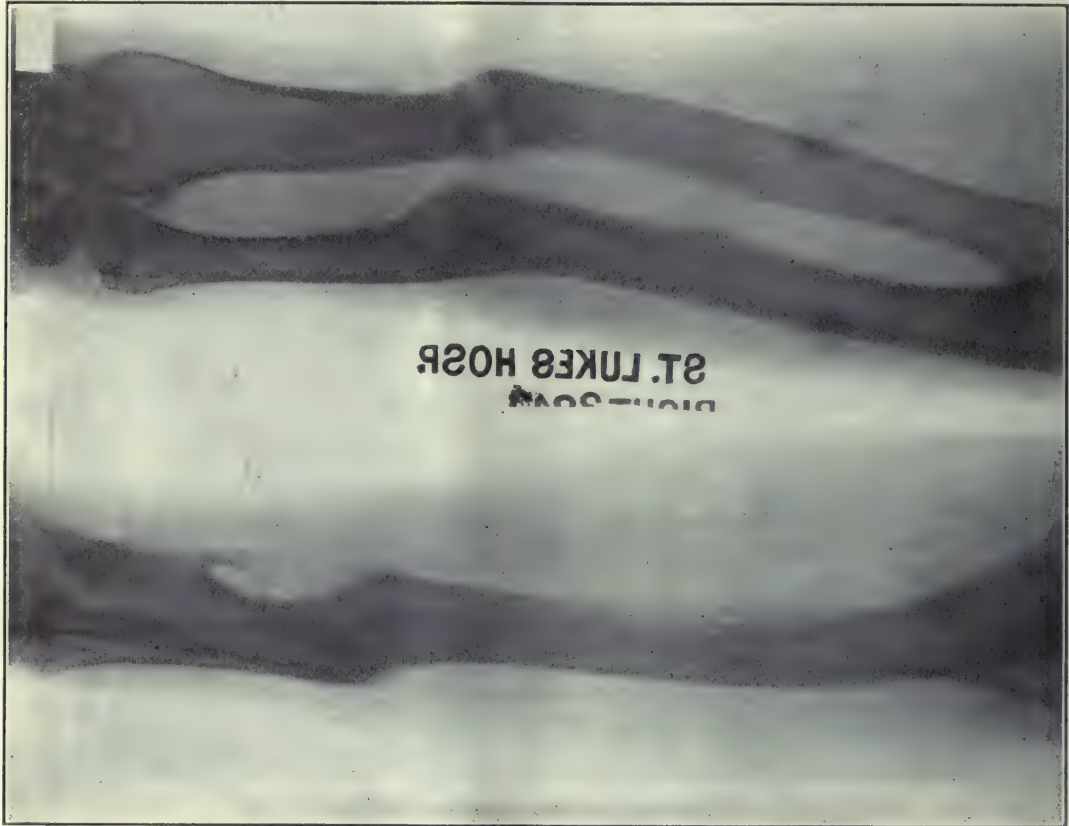


Fig. 6. Old Fracture of Radius and Ulna. Approximation of Upper Fragments. Faulty Rotation of Upper Radial Fragment. Kindness of Dr. Abbe.

operate where others will not, but the present tendency seems to be to extend the sphere of the open operation in cases of fracture, and there seem to be special inducements to operate in certain cases of fracture of the shafts of the bones of the forearm. Probably no one would uphold the general practice of operating upon simple fractures where good apposition of the fragments can be maintained by indirect splints. Nor would it be easy, on the other hand, to find surgeons who would deny the wisdom of resorting to open operation in cases of severe deformity with disability or of non-union of fragments due to interposed soft parts. But the field for controversy includes those cases where

The amount of trauma necessary, especially to periosteum, with attendant delayed union.

Liability to infection.

Frequent breaking of the suture.

Impossibility of maintaining good position of the fragments. (Figs. 10 and 11.)

The use of direct or so-called internal splints of metal will, it is believed, deprive the reasons against operation above mentioned of much of their weight if the circumstances of the case in question permit of their use. By means of aluminum plates and steel screws the fragments are held firmly in position and displacements are prevented whether they be of lateral, angular or torsion type, in a manner

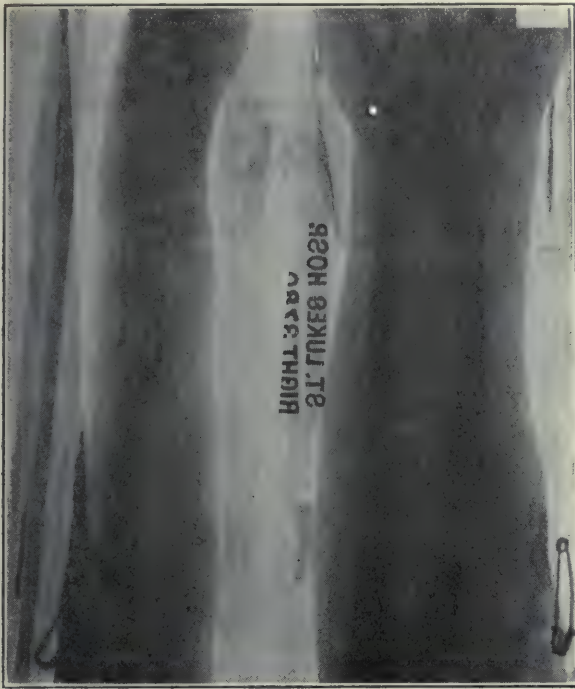


Fig. 7. Fracture of Radius and Ulna With Overlapping Deformity Reduced.

not to be expected of a wire or other suture, or even several of them.

In the case of simple fractures of the shafts of both bones of the forearm or that of the radius alone, the procedure is as follows: After reduction of any apparent displacement by careful manipulation the fragments are immobilized in the semi-prone position in flat, well padded antero-posterior splints a little wider than the forearm and extending from the elbow to the knuckles. It is especially important to pad the splints well at the lower part of the forearm to avoid harmful pressure on the vessels and the median nerve. Frequent adjustment may be needed for a few days in order to avoid obstruction to the circulation and to tighten the strapping and bandage as swelling, if present, diminishes. If there have been no swelling and no deformity, plaster of Paris molded splints are employed. Skiagrams are then made, one with the hand semi-prone, its anterior surface toward the sensitive plate, the other with the hand also semi-prone but with the ulnar surface toward the plate. In this one the radius and ulna should not be quite in line with each other and with the point of origin of the *x*-rays. In other words, the shadows of the two bones should not overlap and obscure each other on the plate. If careful examination of the skiagram in the manner described above shows good position of the bones with no faulty rotation of the upper radial fragment, no change in treatment is necessary.

In the series of cases under consideration, one or both bones were refractured in no less than 12 per cent. of all cases. Whether this high proportion be exceptional or not, it calls for consideration in the planning of treatment. Most of these patients are young and heedless and some form of splint should be continued until the greatest likelihood of refracture is past. Union in faulty position may play its part as a factor in causing such a frequent occurrence of this mishap. If so, an argument is added in favor of accurate replacement of the fragments such as is frequently possible only by means of the open operation.

If, after reduction, the position of the fragments is satisfactory and there is no tendency to recurrence of deformity, massage is begun by one skilled in its use, within eight or ten days after reduction. At first the manipulation is confined to effleurage while the forearm rests upon the cautiously opened splint. Later, when union is well under way, the forearm is removed from the splint during more thorough massage. The benefit of massage in promoting the absorption of swelling, hastening union and a resumption of use of the member is very great here as in the case of other fractures.

If the skiagrams after the first reduction show malposition of the fragments, whether it be angular deformity, overlapping or faulty rotation, further attempts at reduction are made, under nitrous oxide anesthesia and the result ascertained by further use of the *x*-ray. If faulty rotation be present the



Fig. 8. Fracture of Shaft of Humerus Showing Overlapping and Rotation Deformity.

forearm is immobilized in full supination, with an angular splint extending well up the arm and down to the knuckles with the elbow flexed to a right angle.

If abnormal approximation of radius and ulna be present, it is impossible to overcome it by the use of any so-called interosseous pads. Complete rotation of the radius depends upon an interosseous space of normal width. Therefore, if radius and ulna are approximated so that rotation will be prevented after union, an open operation will afford the best prospect for saving that function.

To recapitulate, the indications for direct splint-

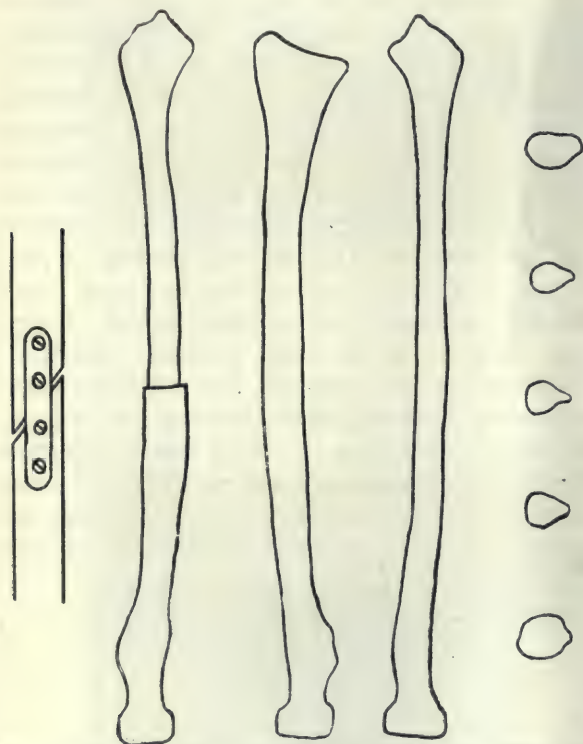


Fig. 9. Outlines of Radius, Antero-posterior and Lateral, With Cross Sections at Various Levels, Showing Greater Diameter of Shaft to be That from Radial to Ulnar Side. Also Diagram of Aluminum Cleat Holding in Place Fragments of Obliquely Fractured Bone.

ing by open operation are considered to be the following:

Persistent overlapping of fragments (Fig. 1) or other marked irreducible displacement.

Non-union due to interposed tissue or other cause. (Fig. 2.)

Marked angular deformity. (Fig. 10.)

Faulty rotation of the upper radial fragment which cannot be kept reduced in the ordinary indirect splints. (Figs. 1 and 5.)

Old fractures with mal-union and disability. (Fig. 6.)

Approximation of radius and ulna. (Narrowing of interosseous space.)

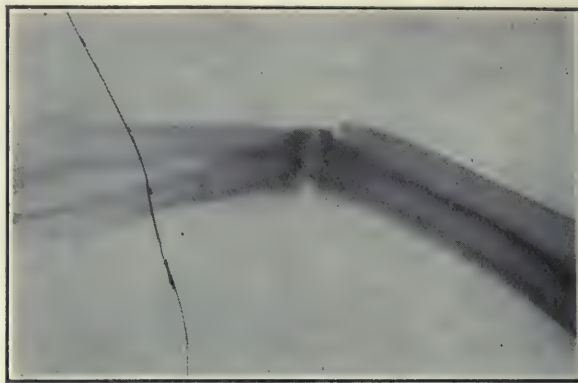


Fig. 10. Suture Ineffective in Overcoming Angular Deformity of Fragments.

W. Arbuthnot Lane⁷, E. M. Corner⁸ and other English surgeons have employed steel plates held by screws in the fragments in repairing fractures. C. A. Elsberg⁹ uses aluminum tubes which are fitted into the medullary cavity of long bones at the site of fracture. Watson Cheyne¹⁰ uses collars of aluminum partly encircling the fragments at the seat of fracture and retained by steel screws.

Aluminum seems to be well adapted for use as direct splints. It furnishes good material for plates or cleats described below. It is easily cut by scissors or drilled through by any sharp pointed steel instrument, and yet it is strong enough to hold the fragments of bone firmly in place even where there is a strong tendency to their displacement.

In using an aluminum cleat (Figs. 9, 12 and 13) for the repair of the fractured shaft of radius or ulna, sheet metal of a thickness of 21 or 23 Stubb's gauge is selected. A suitable size for the cleat in



Fig. 11. Suture Ineffective in Fracture of Humerus. Faulty Rotation of Fragments.

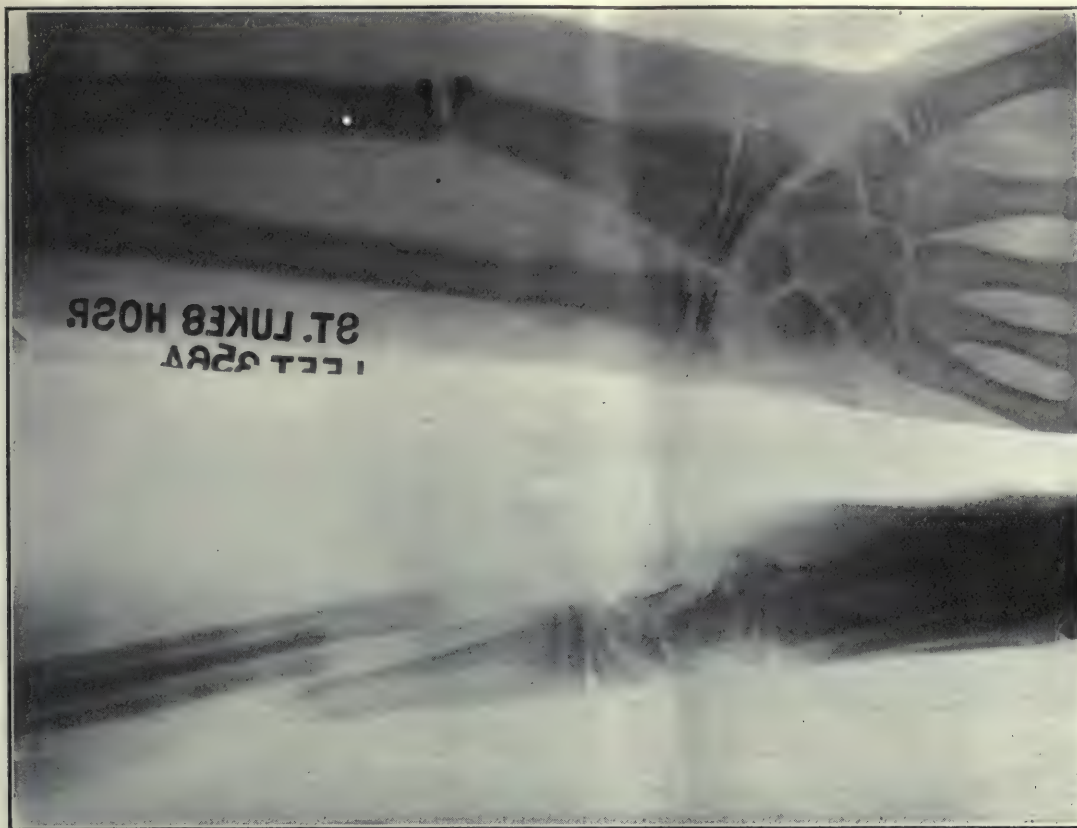


Fig. 12. Persistent Overlapping of Radial Fragments Treated by Aluminum Cleat and Steel Screws. The Aluminum Plate is Almost Invisible Owing to Its Transparency to the X-Rays.

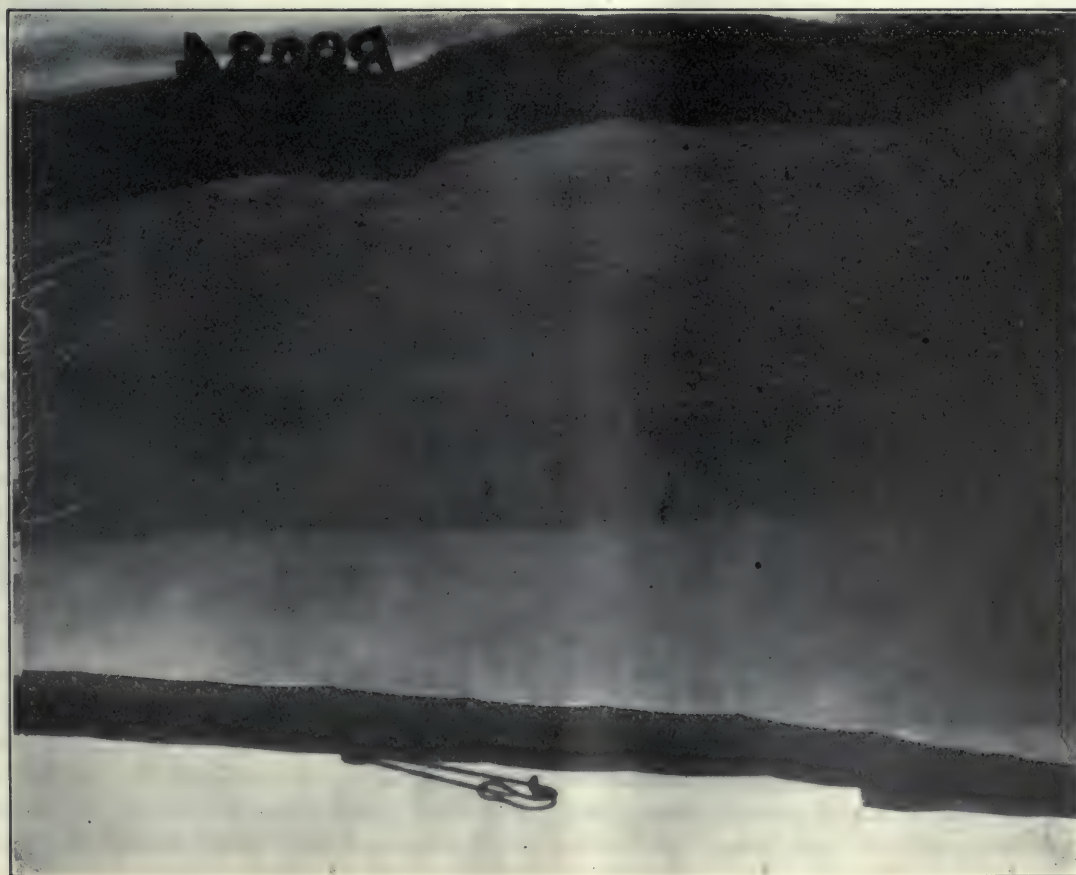


Fig. 13. Fractured Femur Treated by Internal Splint of Aluminum and Steel Screws. Kindness of Dr. Douglas.

the case of a patient fifteen years old would be about one-quarter inch wide by one and one-half inches long. It is curved from side to side so as to fit snugly against the bone. (Aluminum is transparent to *x*-rays.) The incision is made long enough to expose an inch or more of each fragment. The ulna being superficial throughout its length is easily accessible with the forearm prone upon a sandbag at the patient's side as he lies supine. The radius is reached most readily at its outer and pos-

cleats, however, the technic is more simple and requires exposure of but one aspect of the bone, namely, that nearest to the operator. Each fragment in turn is held up in the wound by a narrow periosteal elevator or stout blunt hook slipped under and in close contact with it, while the end is trimmed with rongeur or wire saw or cutting forceps. Especial effort is made to preserve intact all periosteum. An assistant steadies the fragment while the operator drills the holes with an instrument a trifle

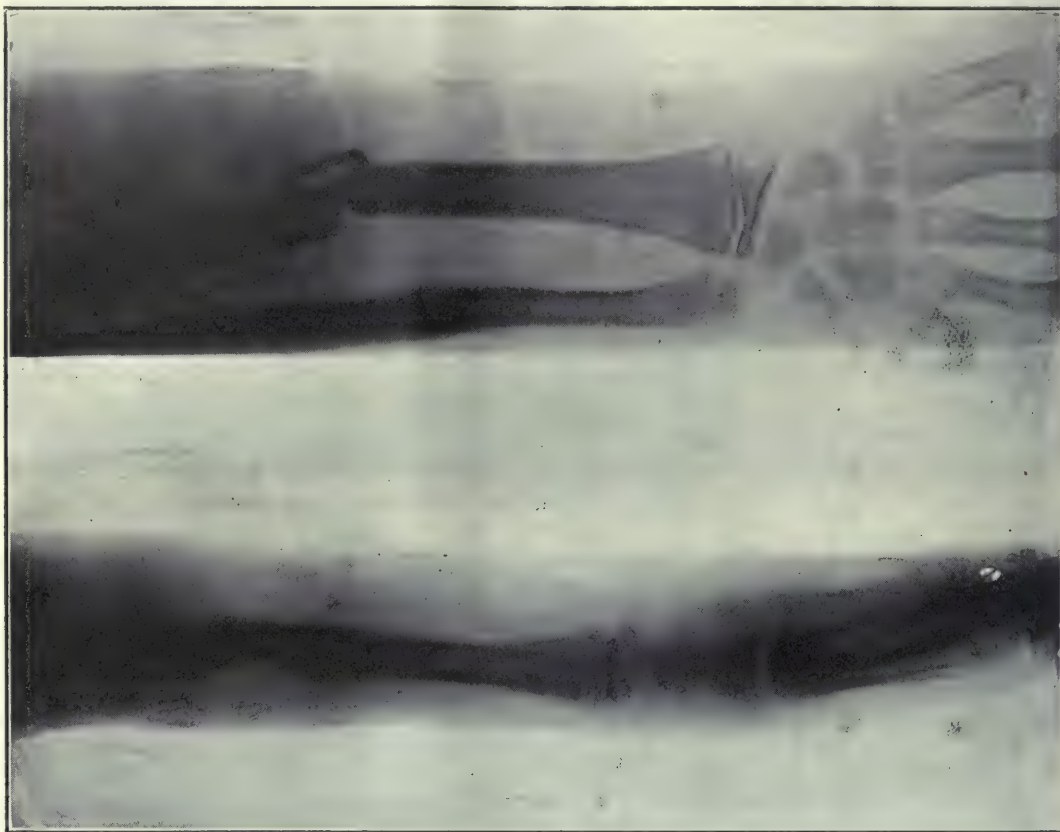


Fig. 14. Fracture of Radius Treated by German Silver Staple. Ineffective Because Allowing of Hinge Motion Between Fragments.

terior aspect. Its fragments should be secured together while the hand is fully supinated. But in order to work upon this bone in supination it must be either attacked from its anterior surface, or, if the incision be posterior, it will be necessary to extend the extremity above the patient's head with the forearm resting upon a separate table. In this position supination brings the dorsal surface uppermost.

Unnecessary traumatism is studiously avoided throughout the operation. Nor is much traumatism called for. To be sure when sutures are employed it is necessary to expose the fragments completely in order to transfix them with the drill and to pass the suture material from both sides. With the

smaller than the screw to be introduced. The screws are of steel with round heads, and several lengths are at hand to select from. The screws are to penetrate only partly through the shaft of the bone if the fragments are easily retained in good apposition, but if greater strength is required the points rest in the dense structure at the farther side of the bone.

The lengths of screws most used are three-eighths and five-eighths of an inch. The screws are placed as near the ends of the fragments as is compatible with security. If but one screw be placed on each side of the fracture a certain amount of hinge movement may occur between the fragments, and hence two screws should be in-

serted on at least one side of the fracture. If this procedure be followed no displacement is possible, whereas with either sutures, staples (Fig. 14), or even plates with but one screw on each side of the fracture, rigidity cannot be maintained. Especially is it desirable to maintain this rigidity when the tendency is for the upper radial fragment to rotate upon its long axis, and in such cases no amount of suturing will suffice. In cases in which the fracture is oblique the screws are placed so that each will transfix one fragment only. (Fig. 9.) In time even screws work loose, but not enough to allow of serious displacement.

As soon as one hole is drilled the cleat is placed and the screw is immediately driven. Thus the cleat with its other holes remains as a guide in placing the subsequent drill holes.

The wound is closed after especial attention has been given to the avoidance of hematoma. The usual outer splints are employed after the operation. In all cases, operative or otherwise, massage is begun early, and as in other fractures it is of great assistance in hastening a good functional result.

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ETHMOIDITIS.

In acute suppuration or phlegmonous ethmoiditis there is usually a history of a cold in the head or intense neuralgia for several days. This is marked by swelling of an erysipelatous type along the nose to its root and above it on the forehead.—FREDERICK KRAUSS in the *New York Medical Journal*.

Surgical Suggestions

A young and apparently healthy man with tendosynovitis should always be suspected of gonorrhea.

Shallow, catching, irregular breathing is characteristic of diaphragmatic inflammation—either peritoneal or pleural.—W.

Hydrogen peroxide should not be injected into deep, infections in loose areolar tissue, as the expanding gas pushes the infection into the uninfected areas. Its most useful field is in open places.—W.

In immobilizing the knee-joint the patient is more comfortable and better relaxation is secured if a very slight degree of flexion is maintained.

To differentiate a tender spot from a simulated pain, it will often be observed that pressure on the former causes a decided increase of pulse rate, while in simulation it does not.—W.

Cotton will hold more securely on an applicator if the tip of the latter is dipped in collodion before winding it. The employment of this device will afford a sense of security when applications are made in urethra, bladder or deep sinuses.

Judgment must be used in employing the iodides to diagnose syphilis as many other conditions are improved by this treatment, notably actinomycosis, chronic rheumatoid deposits and chronic lymphadenitis.

The absence of a "history" should never be allowed to weigh against the diagnosis of syphilis—especially hereditary and tertiary syphilis. The disease is often contracted unknowingly as well as innocently, as by nursing infants.

Remember that a syphilitic mucous patch comes quickly, not slowly; it is soft, not indurated; it remains but a short time, not persistently; it is preceded or followed by other mucous patches, and it is apt to be associated with other signs of syphilis.—W.

Operation for cancer of the stomach after the diagnosis has been made by the presence of a palpable tumor can not be hoped to be curative. The hopeful cases are those in which diagnosis is made through an exploratory opening which may be made under cocaine and only large enough to admit the finger.—W.

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NEW YORK, AUGUST, 1909.

PEDIATRIC SURGERY.

The recent publication of a large work on the "Surgical Diseases of Children*," by Professor Samuel W. Kelley, of Cleveland, suggests an interesting historical note. Books relating to pediatric surgery have appeared before, but it is so many years since any was published in English that they have been almost forgotten. Among the earliest of these was a work on the "Surgical Diseases of Childhood," by J. Cooper Forster, London, 1860. In the same year there was published A. W. Johnson's "Lectures on the Surgery of Childhood." Nine years later came Timothy Holmes' 700-page volume on "The Surgical Treatment of the Diseases of Infancy and Childhood" (London, 1869), of which a French translation, by Larcher, was published the following year. No work of record, in English, followed Holmes' important contribution until 1885, when there appeared Edmund Owen's duodecimo of 500 pages, "The Surgical Diseases of Children," published in Philadelphia. A larger work, with the same title and also American, was produced by D'Arcy Power in 1895. These comprise all the noteworthy English and American works relating to pediatric surgery. They were all more or less fragmentary in character, being, for the most part, reproductions of lectures or clinical memoranda on certain surgical affections only.

In German, there appeared in 1894 Karewski's valuable 800-page work, "Chirurgische Krankhei-

ten des Kindesalters." In France the field has been by no means uncultivated. Two works—neither attaining to the dignity of complete textbooks—appeared in the sixties: "Notices sur la Chirurgie des Enfants," by Guersant, in 1864, of which lectures an English translation, by Dunglison, was published in 1873, and "Lecons Cliniques sur les Maladies Chirurgicales des Enfants," by Giraldés, in 1867 (862 pages). In recent times there has also come from France an excellent work by that master clinician, E. Kirmisson, entitled "Précis de Chirurgie Infantile" (1906). While neither voluminous nor complete, this book forms, with Kirmisson's classic "Traité de Maladies Chirurgicales d'origine Congénitale" (1898), an erudite exposition of the essentially infantile surgical disorders and anomalies.

In his preface Professor Kelley says: "No American has yet produced a book devoted entirely to pediatric surgery." He might have added, we believe, that no one before him had attempted so comprehensive a treatise upon the surgery of infancy and childhood.

The historical inquiry suggested by Kelley's book would have little more than an academic interest were it not for the question his work also brings up, viz., Is there *need* for specialists in the surgery of children's diseases? We would not ask, is there *room* for such specialists? for the answer is obvious: Any surgeon who develops special skill in the management of any disease or set of diseases (be it in surgery of the brain or of the gall-bladder) will attract to himself, wherever he may be located, a large number of cases of that disease or set of diseases.

The opening sentence of Kelley's first chapter is: "There should be children's surgeons as well as children's physicians or, 'if one objects to cutting up surgery into little pieces,' as Timothy Holmes says, it should at least be required that the surgeon extend his knowledge to pediatrics." This contains much truth, but it is also true that the general surgeon should, as far as possible, extend his knowledge to general medicine. The opportunity comes to few to develop their skill equally in medical and in surgical pediatrics, and such a development, it would seem, must be largely at the sacrifice of a wide experience in general (adult) surgery. With the support of a medical confrère in difficult problems of infant feeding and obscure complications, will he not be the better pediatric surgeon whose training, large in the management of children, also includes the surgery incident to all decades of life, than he whose experience is restricted to the medical and surgical diseases of children?

* E. B. Treat & Co., New York, 1909. Large octavo; 764 pages.

In a limited sense the orthopedists are specialists in pediatric surgery. Our specialties are still in the molding, and another may yet be carved out for those who would confine themselves to the surgical diseases of children. Whether or not this comes to pass, Professor Kelley's comprehensive work—quite aside from any consideration of the scientific merit of its contents—possesses distinctive historical interest and importance.—W. M. B.

THE TREATMENT OF FRACTURES.

For the management of fractures of the long bones three general plans exist: First, open operation; second, the method of Lucas Championnière, which consists in the daily employment, from the very outset, of massage, soon followed by passive and then active movements—to accomplish which the splint or support is removed each day; third, the time-honored treatment which, variously modified, consists essentially in immobilization until union is secured. In all three systems reduction of the fragments is, of course, an essential part.

That proper reduction is often not accomplished by external manipulation furnishes the chief *raison d'être* of the open operation plan. That prolonged splinting is provocative of stiff joints, atrophied muscles and nerve injuries has developed, the employment of Lucas Championnière's treatment by massage and movement. While this treatment is not generally understood and is by but few surgeons carried out in detail, it has, at least, hastened the recognition of the vices of prolonged immobilization, and encouraged frequent change of dressings and early movements. And, too, the excellent results accomplished by open operation, have led surgeons to be less content in difficult cases with "the best they could do" in "setting" the limb.

But the most earnest advocates of open operation and of the "massage and movements" plan of treatment have, it appears, allowed their enthusiasm to carry them too far. In urging the more or less general treatment of fractures by operation, one of the chief arguments has been that the *x*-ray shows how seldom complete reduction is effected by bloodless manipulation. But the interpretation of the *x*-ray by those more conservative is, quite logically, that perfect reduction is usually not necessary to a good functional, and even cosmetic, result.

Sir William H. Bennett, than whom there has been no more enthusiastic advocate of Lucas Championnière's method, has been especially active in developing and teaching this treatment. In the fourth (revised) edition of his *Lectures on the Use of Massage and Early Movements in Recent Fractures, etc.* (1909), we read (pages 30-32): "There is one injury in, which the effect of the use

of this plan from the beginning is most remarkable—viz., intracapsular fracture of the neck of the thigh bone. . . . In such a fracture it is unnecessary to trouble about the adjustment of the fragments. Bony union you know rarely occurs. . . . The object in view should be to get a movable and painless limb with the muscles as strong as possible. No splints should be used. . . . They do no good. . . . Let these cases be treated by smooth rubbing at once and passive movement in twenty-four hours." Such statements were essentially, if not altogether true when Bennett's lecture was first published, in 1900. But how can he square them with the teachings of Whitman, promulgated in 1904 and 1905, and quite ignored in this "revised" issue of this lecture! Whitman has shown that the fragments *can* be adjusted, that bony union *can* be secured; and his method of reduction and fixation is accepted by progressive surgeons as the proper treatment of fracture of the neck of the femur. This being so, we would take the very opposite view from Sir William and say, "there is one injury in which massage and movements cannot be employed except after Whitman's cast is no longer needed—viz., fracture of the neck of the thigh bone"; for the reduction is not a simple procedure, and it must be performed under narcosis; and, in the nature of the condition, the plaster dressing, reaching from chest to toes, must not be removed for several weeks.

There are other cases, *e. g.*, some instances of oblique fracture of the tibia and fibula, in which so much force and manipulation are required to effect reduction, that the removal of the splint or cast the next day, however carefully done, would invite prompt recurrence of the deformity.

A rational statement of the management of fractures might be thus formulated in general terms:—Open operation is indicated in a few forms of recent fracture, and as a secondary procedure when non-union or malunion has resulted from the treatment of an old fracture. Massage and movements should be inaugurated early, preferably at once, in all cases in which the careful removal of the splint does not threaten displacement, and it should be performed daily, if possible, and according to the definite system taught by Championnière and Bennett. In those cases in which the splint may not be so early removed, the joints adjacent to the injury should be released as soon as expedient, and massage should be begun when there is sufficient union to retain the fragments in position. In every case the limb should be inspected within twenty-four hours, if possible, after the "setting" or operation, to determine that there is no undue pressure, which might cause ischemic paralysis.—W. M. B.

Book Reviews.

A Manual of Operative Surgery. By SIR FREDERICK TREVES, BART., G.C.V.O., C.B., LL.D., F.R.C.S., Sergeant-Surgeon to H. M. the King, Surgeon-in-Ordinary to H. R. H. the Prince of Wales, Consulting Surgeon to the London Hospital, and JONATHAN HUTCHINSON, F.R.C.S., Surgeon to and Lecturer on Surgery at the London Hospital, etc. *Third Edition.* In two volumes. *Volume I.* Octavo; 775 pages; 193 illustrations and several colored plates. Philadelphia and New York: LEA AND FEBIGER, 1909.

Although this is the third edition of a standard book, the revision is so complete that a practically new work is in our hands. Compared with the previous edition, the style is more simple and lucid, many sections have been condensed, some sections dealing with obsolescent and obsolete operations have been omitted, and several sections dealing with modern forms of operative treatment have been added. Despite these changes, the valuable parts of Treves' original work do not seem to have been touched. For example, the chapter on the surgery of the acuter forms of intestinal obstruction, written by the greatest living authority on the subject, is one of the best sections of the book and is in its original classic form.

The finest quality of this excellent operative manual is simplicity, clearness and directness of description. Although we find that, here and there, technical details of some importance have been omitted to attain lucidity of description, on the other hand those elaborate, complicated and confusing details so common to most textbooks on the subject have also been omitted. We feel that we are given, succinctly described, the personal experiences of two surgeons of the first rank.

The treatment of the individual chapters is admirable. Each is headed by a general description of the operation and a brief historical note showing the evolution of the operation. Then the indications for the operation are discussed. After the preparation of the patient is described and the instruments to be employed for the operation (the simple armamentarium of these surgeons is noteworthy), the description of the operation of choice is presented. Methods found of value in the hands of other surgeons are often added. At the end of the chapter comment upon the operation is made. These "comments" are of great value, full of sound surgical sense, neither ultra conservative nor over radical. Occasionally, however, the statements are dogmatic.

In essentials, there is little that we would change in the book; some details are open to criticism. The abdominal incisions employed are peculiar. A favorite one is directly through the semilunar line. Muscle fibers are often fearlessly cut across. The Kammerer type of incision is mentioned only to be condemned. We find also that "the practice of applying the actual cautery or pure carbolic acid to the appendix stump is to be condemned." It is surprising to find that in only 50 per cent. (or less) of the cases of appendicitis abscess is the appendix removed. After operations for perforated gastric ulcer and other forms of perforative peritonitis, the patient's pelvis is raised; in fact, the authors do not seem to know the Fowler position. We naturally expect Englishmen to give their own people credit wherever possible, but we thought it had been pretty generally agreed that McDowell and not "Spencer Wells was the pioneer of ovariectomy" (p. 333). On the contrary, we confess some surprise when Englishmen who deserve credit for their work are not given it. For example, Moynihan made an important contribution to gall-bladder surgery when he showed that by delivering the lobe of the liver out of the wound the gall-bladder and ducts were rendered far more accessible than ever before. The fact is not mentioned.

The publishers deserve credit for the manner in which they have prepared this book. The binding is both artistic and durable, the paper good and the print very clear. In a careful reading we have noticed only two minor typographical errors.

A System of Operative Surgery. By Various Authors. Edited by F. F. BURGHARD, M.S. (Lond.), F.R.C.S. (Eng.), Teacher of Operative Surgery in King's College, London; Surgeon to King's College Hospital; Senior Surgeon to the Children's Hospital, Paddington Green. In four volumes. *Volume I.* Large octavo; 751 pages; 341 illustrations. London: OXFORD UNIVERSITY PRESS, 1909. Price, \$10 per volume.

In connection with a review of the third edition of Bickham's Operative Surgery (AMERICAN JOURNAL OF SURGERY, January, 1909), we surveyed the field of up-to-date works, in English, on this subject, comparing their respective advantages according to the needs of the intending purchaser. Than all of the works discussed (to which we may now add the new edition of Treves') the system of which the handsome book before us is the first of four volumes, is much more elaborate (and more costly). In actual substance, however, it probably will not greatly exceed that other English work, in two volumes, by Jacobson and Rowlands, which is set in much smaller type and contains fewer and smaller illustrations.

British surgical methods vary in many particulars from our own, and such books as these are of great interest for a comparison of these methods. In other works from England, American and Continental contributions to surgery have not always received due recognition. As far as one may judge from this volume, we shall have less reason to complain on that score of Burghard's System, which appears to be constructed on broader lines, albeit distinctively an exposition of British operative surgery.

The editor states in his preface, quite truly, that by reason of the great elaboration of operative methods in every direction "it has become increasingly difficult for any single writer to deal with such an important subject as operative surgery in an authoritative and efficient manner." It remains to be seen whether certain disadvantages more or less inherent in multiple authorship will counterbalance the good features such a plan seeks to secure. We suspect that this multiple authorship gave rise to the "pressure of circumstances" which necessitated the postponement of the sections on Operations for Tuberculous Affections of the Bones and Joints, to the second from the first volume, in which latter it was to have appeared just after the sections on Operations for Non-Tuberculous Affections of the Bones and Joints. These two divisions are separated by a section on Plastic Surgery—not a vital defect, to be sure, but a distinct violence to logical arrangement.

Nine sections constitute Volume I, as follows: By C. B. Lockwood, The Principles and Technique of Wound Treatment; by J. W. Houghton, The Methods of Local Anesthesia; by Burghard, Amputations, Operations Upon Arteries, Veins and Lymphatics, Operations Upon Nerves, Operations Upon Muscles, Tendons, Tendon Sheaths and Bursae, and Operations for Non-Tuberculous Affections of the Bones and Joints; by T. P. Legg, Plastic Surgery.

The first section discusses with extreme brevity air infection, operating theaters, sterilization, disinfection of the hands, disinfection of the patient's skin, the use of chemicals, drainage, methods of operating and asepsis, the organization of operations and the treatment of infected wounds. It covers altogether, including an introductory chapter, but twenty-six pages.

The second section, although also very succinct, presents the essentials of infiltration and regional analgesia as conducted by the author (Houghton) and, most interestingly, the principles and technics of spinal analgesia.

About 200 pages are devoted to the description of the various amputations and a consideration of their relative indications and advantages.

In the long section on Operations Upon Arteries, Veins and Lymphatics, intravenous infusion is described, but nothing is said of transfusion! Of the methods of arteriorrhaphy Dorrance's is preferred as an improvement on the work of Carrel and others, and it is the only one described. Reversal of the systemic circulation in a limb is also discussed, the cases of Hubbard, Ballance and Wieting being referred to. The chapter on Operations upon the Lymphatics consists of a paragraph on suture of the thoracic duct, and a description of the operation for lymphatic drainage

which Simpson Handley recently published under the title of "lymphangioplasty."

In the section on Operations Upon Nerves a chapter is quite properly devoted to operations on the cranial nerves and the Gasserian ganglion. This interesting section should be logically preceded or followed by the sections on the surgery of the brain and spinal cord, and it therefore might better have been postponed to a later volume.

So large is medicine, and so vast is its literature that one cannot expect completeness in any general work (those that approach it are rare gems), especially one written by several men. This book, too, is not free from omissions. As instances, we find described for operations upon fractures the use of ivory pegs, metal pins, screws, plates, etc., but no reference to Elsberg's aluminum medullary splints. So, too, in the section on Plastic Surgery various operations for Dupuytren's contracture are described, but not Keen's.

In this rather cursory inquiry into this book we have deliberately sought for matters to criticise—as reviewers should do; but we have found much more to admire than to condemn. Dealing as it does largely with the "classical operations" (amputations, ligation of vessels), one must not allow this volume to determine his impression of the entire work. If, however, the volumes to come are equal to what has appeared, Burghard's System of Operative Surgery will be a most valuable and attractive reference work for American as well as for English surgeons. Whether gynecological, ophthalmic and aural operations are to be included the preface does not state, but as far as the work goes it will be, if it is uniform with the first volume, an authoritative treatise, especially satisfying in details of technic and clear in the exposition of indications.

In these days of perfected half-tone processes, and a special craft of medical illustrating, one has a right to expect much in this direction of any large surgical work. We cannot, however, pass by without a word of praise the numerous excellent original wash drawings with which this book is illuminated, nor the artistic manner in which it is printed and bound.

Les Regimes. Alimentation rationnelle dans la Santé et les Maladies. Par le Dr. F. DE GRANDMAISON. Duodecimo; 263 pages. Paris: A. MALOINE, 1909.

Impressed with the effect that a proper selection of diet has on both the developing child and the full-grown adult, the author enters into the questions of diet in health in great detail. Diet in disease is arranged first in a general way; subsequently the diseases are taken up individually and the diets for them are specifically classified. Special attention is paid to the diet in diabetes. The author draws his material from a large experience and from careful selection from the works of other authorities.

On Infantilism from Chronic Intestinal Infection, Characterized by the Overgrowth and Persistence of Flora of the Nursling Period. A study of the Clinical Course, Bacteriology, Chemistry and Therapeutics of Arrested Development in Infancy. By C. A. Herter, M.D., Professor of Pharmacology and Therapeutics, Columbia University. Duodecimo; 118 pages. New York: THE MACMILLAN COMPANY, 1908. Price, 90 cents.

Herter describes a form of infantilism in which there is a marked retardation in growth without any impairment of the mentality. Thus a child of seven years weighed 25 pounds, and had a body length of a three-year-old child. The abdomen is often distended, there is moderate anemia and the muscular development is very poor. One of the children began to walk when five years old. Intestinal disturbances regularly belong in the clinical picture. The stools are not usually watery, but rather soft and fatty. There is sweating, exaggerated appetite and thirst, and more rarely attacks of petit mal. Marked rachitis is not often present.

Herter pays considerable attention to the intestinal flora. He found mostly Gram positive bacteria so that the microscopic picture resembled that of a breast milk stool. The

Gram positive bacteria consisted of the bac. bifidus (Tissier) a similar bacillus called by Herter bac. infantilis, and many cocci resembling the enterococcus (Thiercelin) and the micrococcus ovalis (Hirsch-Libman). The bacilli were not pathogenic for guinea-pigs. During severe attacks of the intestinal disturbances which occur so frequently in this condition the Gram positive bacilli were in excess and during periods of improvement bac. coli and bac. lactis aerogenes were again in greater numbers. The stools were very fatty (often 50 per cent. fat), contained gas bubbles, mucus and epithelium. Indol is present in small amount; skatol was absent.

The retardation in growth is due to the incomplete manner in which the food is used up. Carbohydrates are not borne well, for tympanites results when they are given in any amount. Fats are taken better, but they are poorly assimilated. Often 40 per cent. are found in the stools. The nitrogen metabolism is but little retarded. The magnesium, lime and phosphorus balances were often negative. Herter thinks this poor resorption is caused by a chronic inflammation of the intestinal mucosa due directly to the abnormal bacterial flora. The bacteria cause intestinal decomposition and produce a chronic intoxication of the nervous and muscular systems.

The treatment consists in placing the patient in a mild climate, with quiet surroundings and on a proper diet. This latter depends considerably upon the individual patient. Carbohydrates must be used sparingly. Their tolerance must be carefully determined. Fats must be so regulated that large quantities are not found in the stools. Proteids given best in the form of milk after the third year. Eggs do not agree with these patients. A part of the nitrogen is given in the form of gelatine, which in addition is a poor culture medium for the bac. bifidus and infantilis. Iron is contra-indicated. Herter gives small doses of whiskey when the circulation is poor.

Vaccine and Serum Therapy; including also a Study of Infections, Theories of Immunity, Opsonins and the Opsonic Index. By EDWIN HENRY SCHORER, B.S., M.D., Assistant Professor of Parasitology and Hygiene, University of Missouri; formerly Assistant, Rockefeller Institute for Medical Research, New York City. Octavo; 131 pages; illustrated. St. Louis: C. V. Mosby Co., 1909.

The opsonic theory has in recent years been subjected to so much discussion, both adverse and laudatory, that the interested practitioner finds it exceedingly difficult to form a just estimate of the value of this theory. A book of this character, therefore, which aims to outline, in an impartial manner, the present status of this vexed subject, may be regarded as very timely. Schorer has performed his task in a highly commendable manner. His exposition of the opsonic and other theories of immunity can be comprehended by the novice; the descriptions of technic are clear, and reveal evidences of extensive personal experience with Wright's methods; the author's grasp of the literature is profound, and above all, his judgment is fair and distinguished by fine scientific sense. On the whole, Schorer's criticism of the opsonic theory and method of therapy is unfavorable. While he does not deny the existence of opsonins, he believes that these substances are probably only one of a series of immunizing processes in the human body, perhaps not even the most important. The opsonic index he regards as unreliable and the reasons therefor are plainly and clearly set forth. His views on the value of the injection of vaccines for therapeutic purposes are expressed guardedly. The book leaves us with the impression that despite Wright's extensive labors, we still know very little of opsonins. As the author succinctly puts it in his final sentence: "Credit is given to Wright, not for the discovery of the method of immunization by injections of killed cultures, but for its revival. The employment of this method of inducing immunity and treating bacterial infections and diseases need not necessarily be associated with opsonins and opsonic immunity."

The second part of the book on "Serum Therapy" is a practical and up-to-date presentation of the subject.

Studies on Immunization, and Their Application to the Diagnosis and Treatment of Bacterial Infections.

By SIR A. E. WRIGHT, M.D., F.R.S., Director of the Department for Therapeutic Immunization, St. Mary's Hospital, London, W.; late Professor of Pathology, Army Medical School, Netley. Octavo; 490 pages. London: ARCHIBALD CONSTABLE & Co., LTD., 1909.

This book, to us, has proven a big disappointment. We had looked forward to an answer to the vast amount of criticism that has arisen in recent years of Wright's theory and methods, but, instead, we find here simply a collection of reprints of the more important papers by the author and his pupils, embracing in historical order a logical survey of the subject. In his preface, Wright recognizes the necessity of answering criticisms and claims he has done so by resorting to a system of reference, in which the index is wrought out in exhaustive detail. While this may be a fine labor-saving device, we still believe that this ingenious and naive method has failed in its purpose. With the exception of a very few instances, the author does not refer to any work on opsonins other than that of himself or his pupils. However, the purposeful elimination of makers relating to opsonic technic, phases of the subject that have perhaps received the largest share of criticism, adds further to the sense of inadequacy.

Space forbids us to discuss the author's views at any length, but we may venture upon this one criticism. We long ago gained the impression that most of Wright's work suffers from the fact that he is an untrained clinician; a perusal of this book, in a large measure, confirms this impression. This is evident particularly in many of his *post hoc, ergo propter hoc* arguments, and in such statements as "Mikulicz' disease appears to be associated with streptococcus inflammation of the salivary and lachrymal glands" (p. 442), and the hint on p. 435 that diabetes may be due to a bacterial infection of the pancreas.

The author has gained very little by publishing his work in this form.

A Very Young Ovum in Situ. By PROF. G. LEOPOLD, Geheimer Medizinalrat, Director of the Royal Gynecologic Clinic and School for Midwifery; Member of the Royal Medical Board of Dresden. Comprising the fourth volume of the "Arbeiten aus der Frauenklinik in Dresden." Authorized English translation, by W. H. VOGT, M.D., Gynecologist and Obstetrician to the Lutheran Hospital, St. Louis, Missouri. Octavo; 69 pages; six lithographic plates. St. Louis: C. V. MOSBY Co., 1907.

The classical work of Peters, upon whose descriptions of a very young specimen our knowledge of the implantation of the human ovum is almost entirely based, has stimulated efforts toward the discovery of similar and even younger ova in order to throw additional light upon this highly interesting subject. Thus we have had in recent years the descriptions of Graf von Spee, Henkelom, Marchand, Teacher and Bryce, Jung, etc. An additional interest, however, attaches to the description of the ovum obtained by Leopold, because it is, in all probability, the youngest human ovum on record. It was found after a careful search in the uterus of a young woman who had committed suicide by phosphorus. The ovum measured only 1.4 x 0.9 x 0.8 m.m. in size, a trifle smaller than that of Peters. The microscopic descriptions, which are in considerable detail, confirm the findings of Peters, affording a well merited tribute to the solidity of this observer's labors. The only differences are the following: In Leopold's ovum, 1. There is no amnion and exocoelom. 2. The ectoblast does not lie in close contact with the ovular chamber, but is separated therefrom by a narrow blood space. 3. The surrounding blood spaces are more abundant and wider. The last two differences Leopold regards as probably pathological.

To those who desire to study this interesting phase of embryology, this work will serve as an excellent introduction. For this purpose, it is probably even better than the monograph of Peters, for the reason that it affords an excellent survey of all the work that has gone before. The lithographs are from the original German source. The translation gives evidences, in places, of considerable carelessness.

Nouveau Traite de Chirurgie. Publié sous la direction de A. LE DENTU et PIERRE DELBET. Fascicule xii. *Maladies des Veines et des Lymphatiques* par PAUL LAUNAY et HENRI BRODIER. Octavo; 266 pages; 39 illustrations. Paris: J. B. BAILLIÈRE ET FILS, 1909.

The first 62 pages deal with lesions of the veins, traumatic, varicose and inflammatory. Puerperal thrombophlebitis, however, and the operative treatment of this malady are not mentioned.

The remainder of the volume is devoted to diseases of the lymphatic system, first to those of the lymph vessels, next those of the thoracic duct, thirdly, in great detail, all the numerous diseases of the lymphatic glands, and finally lymphangiectasis.

Cosmetic Surgery. The Correction of Featural Imperfections. By CHARLES C. MILLER, M.D. *Second Edition, enlarged.* Duodecimo; 136 pages; 95 illustrations. Chicago: PUBLISHED BY THE AUTHOR, 1908.

Although the title page states that this is an "enlarged" edition of Miller's primer on featural surgery, the enlargement consists only in the addition of 22 illustrations, 20 of them as frontispieces. All the other pages are exactly as in the first edition—not even the misspellings corrected. The author would have done better to throw away the stock left over from the first issue and prepared a book with better printing, more acceptable drawings and some substance. A review of this little work was published in the AMERICAN JOURNAL OF SURGERY, January, 1908.

Books Received

Myomata of the Uterus. By HOWARD A. KELLY, Professor of Gynecology in the Johns Hopkins University, and THOMAS S. CULLEN, Associate Professor of Gynecology, Johns Hopkins University. Royal octavo; 72 pages; 386 illustrations by August Horn and Hermann Becker. Philadelphia and London: W. B. SAUNDERS COMPANY, 1909. Cloth, \$7.50; half morocco, \$9, net.

Bier's Hyperemic Treatment in Surgery, Medicine and the Specialties. A Manual of Its Practical Application. By WILLY MEYER, M.D., Professor of Surgery at the New York Post-Graduate Medical School and Hospital; Surgeon to the German Hospital, New York, etc., and PROF. DR. VICTOR SCHMIEDEN, Assistant to Professor Bier, University of Berlin. *Second Edition*, revised and enlarged. Octavo; 280 pages; 103 illustrations. Philadelphia and London: W. B. SAUNDERS Co., 1909. Cloth, \$3, net.

Treatment of the Diseases of Children. By CHARLES GILMORE KERLEY, Professor of Diseases of Children, New York Polyclinic Medical School and Hospital; Physician to the New York Infant Asylum and Maternity, etc. *Second Edition*, revised. Large octavo; 629 pages; 78 illustrations. Philadelphia and London: W. B. SAUNDERS Co., 1909. Cloth, \$5; half morocco, \$6.50, net.

Hand-Book of the Diseases of the Rectum. By LOUIS J. HIRSCHMAN, M.D., Detroit, Mich., Lecturer on Rectal Surgery and Clinical Professor of Proctology, Detroit College of Medicine; Attending Proctologist, Harper Hospital, etc. Octavo; 374 pages; 147 illustrations and 2 colored plates. St. Louis: C. V. MOSBY MEDICAL BOOK AND PUBLISHING COMPANY, 1909.

A Practical Treatise on Rectal Diseases. Their Diagnosis and Treatment by Ambulant Methods. By JACOB DISSINGER ALBRIGHT, M.D. Octavo; 455 pages; 32 plates and 39 other illustrations. Philadelphia: PUBLISHED BY THE AUTHOR, 1909.

Progress in Surgery.

A Résumé of Recent Literature.

Hypogastric Laparotomy with the Aid of Momburg's Waist-Constrictor for Uterine and Highly Situated Rectal Carcinomata (*Laparotomia hypogastrica unter Anwendung des Momburg'schen Taillenschlauches bei Uterus und hochsitzenenden Rectumcarcinom*). PROF. NEUHAUS, Berlin, *Berliner Klinische Wochenschrift*, May 17, 1909.

About a year ago Momburg recommended compression of the aorta by means of a constrictor passed tightly two or three times around the waist, for the purposes of arresting hemorrhage in operations upon the pelvic organs or lower extremities. This method has proved highly effective in a considerable number of cases and is free from danger. Neuhaus recommends it particularly in operations for uterine and high rectal carcinoma, in which, as is well known, the suppression of hemorrhage is an important element of success. In Mackenrodt's clinic, this method was eminently successful in five operations for uterine cancer. The author recommends two modifications. First, that the constrictor be applied after the abdomen is opened; and secondly, that the constriction be applied over a sterile air cushion which is placed within the abdomen over the abdominal vessels. These modifications have the advantages that the constriction can be better applied and with far less force.

Clinical and Experimental Studies on Momburg's Method of Ischemia (*Klinische und Experimentelle Beiträge zur Frage der Momburgschen Blutleere*). H. RIMANN and W. WOLF, Leipzig. *Deutsche Zeitschrift für Chirurgie*, May, 1909.

In two cases of resection of the rectum for carcinoma, the girth was constricted by an elastic band, after the method described by Momburg. In both cases bleeding from the field of operation stopped, but in both cases, after the band was in place a short time, the blood pressure dropped rapidly and the patients became pale, pulseless, and went into profound collapse.

On the basis of these experiences, the authors performed a series of experiments with Momburg's method on rabbits, and showed conclusively that the constriction throws great strain on the heart.

They conclude from animal and human experiences that Momburg's method should not be employed in old people, nor in patients with cardiac lesions or marked arteriosclerosis.

Vegetating Cystic Epithelioma of the Right Ovary in a Child Seven Years Old (*Epithelioma Kystique Végétant de l'Ovaire Droit Chez une Petite Fille de Sept Ans*). KIRMISSION. *Annales de Médecine et Chirurgie Infantiles*, May 15, 1909.

The patient came under the author's observation with symptoms of torsion of the pedicle of a cyst. He operated and found a cystic tumor of the right ovary with a twisted pedicle. Microscopic examination showed a cystic vegetating epithelioma.

The brother of this girl, at the age of 19 months, had a tumor of the left testicle that the author removed. The microscopical examination showed that the tumor is identical with that of the girl.

Recently, Kirmission examined the mother of these two children and found a cystic tumor the size of a nut in the anterior part of the vaginal wall, and probably of Wolffian origin.

Inflammatory Tumors of the Omentum (Epiplöitis) Following Laparotomies and Intraabdominal Inflammation (*Ueber im Anschluss an Bauchoperationen und Entzündungen der Bauchorgane vorkommende entzündliche Geschwülste des Netzes Epiplöitiden*). D. G. ZESAS, *Deutsche Zeitschrift für Chirurgie*, May, 1909.

The study is based on the 44 cases reported in the literature. Thirty-six followed operation, and of these 32 were herniotomies or hernioplasties. The etiology has not been

established; numerous hypotheses have been advanced. The condition usually present is a firm, slightly irregular tumor of varying size, situated in the region of operation or of the inflammation. It appears weeks, months, or even years after the operation or inflammatory affection. Epiplöitis may be present without symptoms, or be mild or serious symptoms. The tumor is always found in the same region, and colicky pain is often referred to that region. Frequently there are signs of peritoneal irritation—vomiting, singultus, meteorism, etc. Usually the temperature is low. In general the prognosis is good and the tumor disappears; sometimes symptoms of ileus, peritonitis, sepsis, supervene.

Jejuno-Colic Fistula Secondary to Peptic Ulcer of Jejunum Following Gastroenterostomy (*La Fistule Jejuno-Colique par Ulcère Péptique du Jejunum à la Suite de la Gastro-Enterostomie*). LION ET MOREAU, Paris. *Revue de Chirurgie*, May, 1909.

This interesting clinical paper deals with a rare complication of peptic ulcer; hitherto there had been but 3 cases on record. The authors add 2 cases. All these cases occurred in males (nearly all the reported cases of peptic ulcer following gastroenterostomy occur in males). Jejuno-colic fistula develops slowly, so that it is usually years after the gastroenterostomy that the symptoms manifest themselves. The two characteristic symptoms are eructations of a fecoid odor and diarrhea. The eructations were present in all 5 cases, the foul odor being very striking. Diarrhea usually alternates with constipation; the diarrheal movements are uninfluenced by all forms of therapy and, after lasting a number of weeks, they suddenly stop. Vomiting and pain are inconstant and not characteristic. The symptoms are therefore those of a chronic incomplete intestinal obstruction with which the physical signs correspond. These are distension of the lower abdomen, traces of visible peristalsis, and an area of dullness in the infra-umbilical region that slowly shifts from side to side with the shifting of the patient's body (pseudoascites, first pointed out by Mathieu). The course of the disease is a progressively down-hill one; all the patients were markedly emaciated in a few months. Treatment is purely surgical, consisting in separating colon from jejunum and suturing the opening in each. In the first case of Lion and Moreau, the condition was not recognized; at the operation the gastroenterostomy made several years before was found patent and to its anterior surface the transverse colon was adherent. Nothing was done, the abdomen was closed. When the patient died one month later, the jejuno-colic fistula was found post-mortem. The second case was cured.

Removal of an Embolus from the Common Iliac Artery with Re-establishment of Circulation in the Femoral. J. B. MURPHY, Chicago, *Journal of the American Medical Association*, May 22, 1909.

The patient was a woman of 41, who after an attack of rheumatism suffered from shortness of breath and heart disease was diagnosed. Three years after the last rheumatic attack, she was seized with a sharp pain in the lower part of the left chest and upper abdomen which was considered pleuritic and treated accordingly. The next morning she was taken with an attack of nausea and vomiting, followed by pain in both legs, which became cold and remained so till the morning following, when the pain in the right leg ceased and it regained its normal temperature, the left leg remained cold, was blue in the thigh and very pale and shriveled at the toes. It was cold to half way between the knee and the trunk and there were large blue blebs scattered over the middle third of the thigh. Examination showed that the patient had a mitral, direct and regurgitant murmur. There was no pulsation in the left femoral artery. The upper margin of the area of the demarcation was then about four inches below Poupart's ligament. The limb was undergoing dry gangrene from arterial obstruction and it was decided to operate at once to remove the embolus which was diagnosed as obstructing the iliac artery. Nitrous oxid was given for thirty seconds and the femoral artery was exposed for a length of two and a half inches. Two provisional catgut ligatures were put around it, but not tied, so as to aid in elevating the artery, which

was then incised for one inch parallel to its long axis. It was completely thrombosed. With a delicate forceps the clot (a bifurcated plug an inch and a half long) was drawn from below upward, causing a flow of fresh arterial blood, evidently collateral, through the femoral profundus. This was stopped by finger pressure and the extraction of the clot from the proximal side was begun but the artery did not empty at once. A spoon was then used and more clot withdrawn, but no flow. A number six soft catheter was passed up the artery a distance of seven and a half inches bringing away grumous bloody debris but no arterial blood. It was reintroduced but could not be forced through an obstruction at that point. Finally by the use of a ureteral catheter passed up nineteen inches, a small quantity of arterial blood was released. Then a uterine sound was employed and on the third attempt it seemed to penetrate a free space at a distance of eight and a half inches and was followed by an intense arterial flow carrying much embolic debris. This was stopped by finger pressure in the ligature loop. The incision in the artery was closed with a rapid continuous suture of silk. One or two additional supporting stitches were inserted to control the hemorrhage completely. Unfortunately, the operation was made too late to save the limb, and it was amputated four days later.

Murphy remarks on the symptoms of occlusion of large arteries and refers to his own former experience since he first made a successful end-to-end union of a severed femoral artery. The suture of an incision in an artery is as easy as an incision of the intestine, provided a sufficiently small needle is used. He believes that even cerebral ischemia should be amenable when due to an embolus arrested in the common or internal carotid. He thinks, however, that aspiration through a catheter is better than the method he employed in removing the plug, for if the catheter is divided on the slant with the end open it can be readily introduced and unless the embolus is very hard it can be removed by suction or fragmented by the catheter. Murphy does not advise incision into the exact site of the obstruction, as there would be less tendency to thrombosis if the point selected is above or below, preferably the latter.

A Study of the Action of Scopolamin-Morphine on the Heart, Liver and Kidneys. C. M. NICHOLSON. *Journal of the American Medical Association*, April 3, 1909.

Nicholson reports his experience with 650 cases of anesthesia with scopolamin-morphin used as a preliminary to general anesthesia with chloroform or ether. He reviews the published cases of fatalities with this method and concludes that in no one of them can the death be attributed to the injection of scopolamin. His own experiments on animals are summarized and he finds that they bear the drug well. His conclusions are stated as follows: "(1) The effects of the injection of scopolamin and morphin into animals is similar to that of morphin when given alone, with the exception of the injection into kittens, in which excitement instead of sleep was produced. (2) Continued repeated daily injections produce no degeneration of the heart, liver or kidneys, the physical condition is not impaired so long as the injections are given at such intervals as not to interfere with the animal's nutrition. Daily injections of from one to three times the dose given to patients produces no pathologic changes in animals. (3) The toxic dose of scopolamin and morphin in the experiments corresponds very closely to that of morphin alone for the animals used. (4) The autopsy findings in animals which succumb to a toxic dose are the same as those for morphin, i. e., congestion of the viscera. (5) The animals seemed to acquire a tolerance for the drugs on long-continued daily administrations." Death after operation with scopolamin is, he considers, most likely due to loss of blood, sepsis, or shock. It is very little toxic for animals and certainly produces no degeneration of the heart, liver, or kidneys. He has used it by injection, 1-100 of a grain of scopolamin and $\frac{1}{4}$ of a grain of morphin, three-quarters of an hour before giving ether, in 650 cases, avoiding the extremes of life. In 6 per cent. of the cases there was practically no result, but in the remaining 94 per cent. the patients were quieter before, during, and after the anesthesia. There was

an absence of mucus in the throat, no postoperative vomiting, and a diminution of 50 per cent. in the amount of ether used.

A Case of Symmetrical Gangrene, or Raynaud's Disease. L. E. RUNKLE. *The Journal of the Arkansas Medical Society*, May 15, 1909.

The patient was a young woman who, about two years before, had had a gangrene of the right hand, necessitating amputation, and one year later a gangrene of the left hand which required the same operation. She next developed a sharp stinging pain in the skin near the inner canthus of the right eye. Blebs spread on to the upper lid and nose, broke down, the skin became dark in color and the entire area finally presented one large, black, ulcerating surface. The morbid tissue extended rather deeply. No pain was felt and there was very little swelling. By gentle massage and the application of a salve of yellow oxid of mercury, the necrotic material came away, leaving a large scar which did not interfere materially with the actions of the upper lid. No etiological factor could be found.

The Rectal Shelf. GEORGE BLUMER, New Haven, *Albany Medical Annals*, May, 1909.

The author arrives at the following conclusions:

1. In certain forms of carcinoma of the abdominal organs, notably gastric carcinoma, and in some cases of tubercular peritonitis, implantation metastases in Douglas' pouch are common.
2. These metastases impinge upon the rectum and may infiltrate its submucosa, causing a peculiar shelf-like tumor on the anterior rectal wall, readily felt by the examining finger.
3. In cases of gastric carcinoma this may be an early metastasis, and occurs especially in males.
4. In such cases the primary tumor may be latent and the metastasis may be large enough to cause symptoms of obstruction. It has been mistaken at times for rectal carcinoma and has been removed as such.
5. The not infrequent occurrence of this rectal shelf makes it a diagnostic and prognostic sign of a good deal of importance, and warrants the statement that in no case of obscure abdominal disease should a rectal examination be omitted.

Renal Varix (Angiomatous Disease of the Papillae Renales). PAUL M. PILCHER, Brooklyn, New York. *Annals of Surgery*, May, 1909.

From his study of this subject Pilcher concludes: Renal varix is a distinct pathological entity, an angiomatous disease of the papillae renales, whose etiology and pathology resemble those of varicocele, varicose veins of the leg, varicosities of the cardiac end of the stomach, hemorrhoids, etc. Many cases of so-called essential hematuria are due to renal varix. While it has a distinct symptomatology, it may be impossible to differentiate the condition, before operation, from hematuria of nephritis and of renal papilloma. Usually on bisection of the kidney no lesion is evident grossly; but microscopic examination of the papillae with show angiomatous disease. Renal decapsulation and fixation will cure unilateral hematuria due to nephritis; nephrotomy is the operation for renal varix—it allows thorough examination, and it destroys the varicosities by cutting six of the main connecting venous radicles. (The incision should be made along Broedel's line.) Nephrectomy is indicated only when rapid and bloodless operation is demanded, or when nephrotomy has failed to relieve the hematuria.

Freezing as a Therapeutic Measure; Liquid Air and Carbonic Acid Snow. G. T. JACKSON and S. D. HUBBARD, New York. *Medical Record*, April 17, 1909.

These authors have applied liquid air and carbonic acid snow in various skin lesions for many years and are very enthusiastic in regard to their value in many affections of the skin. The liquid air is applied by cotton swabs and the carbonic acid in the form of snow molded to the skin lesion. For details of the method, the reader is referred to the original paper. The application of these remedies may be made deep or superficial.

Of the various diseases amenable to this treatment, the authors mention lupus erythematosus, nevi, epitheliomata,

keratosis senilis, warts, papillomata, tattoo marks, powder stains, hypertrophied scars, keloid, tuberculosis verrucosa cutis, chloasma, and scrofuloderma. Superficial nevi are readily destroyed with one application lasting from fifteen to fifty seconds. Angiomata may require a second application. Pigmentary and hairy nevi are also easily removed. Better and quicker results are obtained in epitheliomata by freezing than by any other method. The authors have seen no unfavorable effects, and the method is but very slightly painful. The destructive effects of this method, judging from pathological appearances, are due to thrombosis of the bloodvessels.

The Treatment of Pott's Disease at the Sea Breeze Hospital. LEONARD W. ELY, New York. *Medical Record*, June 26, 1909.

In an exceptionally readable and practical paper the author sets forth first of all the three cardinal aims in the treatment of Pott's disease as carried out at this hospital; first to splint the spine effectually; second, to keep the children as much as possible in the open air; third, to permit them to go about and exercise. To meet the first indication, the author has limited himself almost entirely to either the Whitman modification of the Bradford frame, or a plaster of Paris jacket. He believes that all other complicated forms of apparatus are unnecessary. Recumbency in the Bradford frame is the treatment of election for children under three years of age, for cases associated with psoas abscess or contraction, or for patients with sinuses opening in such a manner as to make a jacket impracticable. For children over three years of age, the customary treatment is by the plaster jacket. If the disease lies below the ninth thoracic vertebra, an ordinary jacket is applied; if above the tenth, Ely uses the Calot jacket. Specific directions for the application of these various devices are given. If the disease lies above the seventh thoracic vertebra or if the patient is afflicted with paraplegia, the so-called "grand" Calot jacket is used. As regards abscesses, the author emphasizes the necessity of aseptic handling. A patient with a psoas abscess should be placed in the recumbent posture in order to obviate the effect of gravity. If it is small and high up, it may be left alone. If the necessity for opening arises, this should be done with a trocar and with the strictest attention to asepsis. After opening, the author advocates the injection of an iodoform-ether mixture. This should be repeated every ten days until the abscess ceases to fill. Ely strongly deprecates the common practice of scraping sinuses; it is, in his opinion, utterly useless. In concluding, he emphasizes the necessity of recognizing the fact that Pott's disease is more a tuberculosis than a mechanical condition, and that these patients require fresh air, good food and careful attention to the general condition.

Further Investigation of the Spirocheta Lymphatica.

F. PROESCHER, Pittsburg. *New York Medical Journal*, April 24, 1909.

About a year and a half ago, the author published observations on the discovery of a spirochetæ in the lesions of lymphatic leukemia and lymphosarcoma. In order to test the validity of his discovery, Proeschler inoculated guinea-pigs, monkeys and gray house rats with pieces or emulsions of these tissues. The guinea-pigs acquired lesions similar to those of chronic lymphomatosis. Occasionally the spirochetæ were found in the blood shortly before death. Two monkeys acquired lesions typical of those of lymphosarcoma and spirochetæ were demonstrable in the tissues. The report of the experiments on rats is still incomplete.

The Surgical Treatment of Epilepsy. W. P. CARR, Washington. *New York Medical Journal*, April 17, 1909.

Carr believes that all cases of epilepsy due to any demonstrable focal lesion of the brain or skull should be operated upon. The author's own results have been very encouraging. He has operated on twenty cases, of which 25 per cent. have remained free from attacks at the end of three years. Leaving out four recent cases, his percentage of cures is 39 per cent. Nearly all ob-

tained some benefit from the operation. The operation practised by the author consists in the formation of an osteoplastic flap over the Rolandic area, incision of the dura and exploration for any abnormality. Edema is relieved by the insertion of one or more grooved directors beneath the dura, which is then drained by a small piece of soft rubber tubing. The author advocates a large flap and a wide inspection of the brain.

On Transplantation of the Thyroid (*Zur Frage der Schilddrüsentransplantation*). H. SALZER, Vienna. *Wiener Klinische Wochenschrift*, March 18, 1909.

The author performed a parallel series of experiments. In the first series of animals, he removed the left lobe of the thyroid and implanted it between the fascia and the peritoneum of the abdominal wall. In the second series, the right lobe was similarly implanted after the left lobe had been extirpated. He discovered the interesting fact that in the completely thyroidectomized animal, the implanted tissue healed *in situ* with less necrosis, more evidences of regeneration and far more quickly than in the animals in whom a portion of the thyroid was left behind. The author does not approve of the recommendations of Payr and Kocher, who advise that the implantation shall be made in the spleen and epiphysis respectively. He believes the thyroid implantation will be just as successful and less risky if done within the abdominal wall.

The Prevention and Inhibition of Diffuse Suppurative Peritonitis. A. J. OCHSNER, *Illinois Medical Journal*, May, 1909.

A careful physical examination should be made in every patient suffering with nausea, vomiting, digestive disturbance, gaseous distention or pain in any portion of the abdomen. A diagnosis of chronic appendicitis, gastric or duodenal ulcer or gallstones should be made through a careful study of the history and physical examination and relieved by proper treatment before a perforation is possible.

Patients suffering from intestinal obstruction of whatever cause, should be operated upon at once, and they should never under any condition receive either cathartics or food by mouth after this condition is even suspected.

Gastric lavage should be employed in these cases at once and again immediately before operation, and it is well to leave the stomach tube in the stomach to drain out any intestinal fluid which may regurgitate during the operation.

Opium in any form should never be given before a diagnosis has been made and never in the presence of any form of peritonitis unless gastric lavage has been made, and the introduction of every form of nourishment and cathartics by mouth is absolutely prohibited. This applies to even the simplest forms of liquids, and also stimulants. This applies quite to the same extent to postoperative treatment.

In military surgery it is most important as a prophylactic measure that soldiers enter the firing line with empty stomach and intestines. Abdominal wounds made during battle with large objects like splinters from shells indicate immediate operation. Abdominal wounds inflicted in battle by small caliber bullets, in the absence of hemorrhage, should be treated by absolute rest; not even water should be given by mouth. An exception should be made in cases which can be in the hands of the operating surgeon with satisfactory assistants and facilities within two hours after the injury. Under these conditions an immediate abdominal section is indicated.

Gastric lavage should be made at once in every patient suffering from any form of peritonitis, except from stomach or duodenal perforation, if nausea or vomiting or gaseous distention is present, no matter what other form of treatment may be contemplated.

No food of any kind whatever and no cathartics should ever be given by mouth in the presence of peritonitis, no matter what form of treatment may be contemplated. Even water by mouth should be prohibited until the patient is well on the way to recovery.

Installation of normal salt solution by the method of

Murphy is one of the most valuable means of inhibiting peritonitis. In rare cases in which this method cannot be employed, the solution should be given subcutaneously in quantities of 500 to 1,000 c. c.

Large enemata, except by the drop method, should never be given in the presence of peritonitis.

In order to prevent postoperative peritonitis, it is important never to traumatize the intra-abdominal organs unnecessarily during operation. Much less handling of the intestines is necessary if these are not distended. Therefore give the patient two ounces of castor oil on the day before the operation, but this should never be given in the presence of even the slightest amount of peritonitis.

Gastric lavage following abdominal section often prevents incipient peritonitis from progressing by inhibiting peristalsis; it should always be employed in the presence of nausea, vomiting or gaseous distention.

In acute appendicitis the appendix should be removed before the infection has extended beyond the organ. In chronic appendicitis the organ should be removed before it has an opportunity to cause an acute attack. In acute appendicitis which has been carried through the attack without an operation, it is well to confine the patient absolutely to a liquid diet until his appendix has been removed.

Urachal Cyst Simulating Appendicular Abscess; Arrested Development of Genital Tract. A. H. G. DORAN, London, *Lancet*, May 8, 1909.

The patient, a girl of 17½ years, complained of pain in the right side of the abdomen for one month previously. On examination a large swelling was found to the right of the median line; there was no fever. The vagina was only two inches in depth and a small opening leading to a canal was discovered at the upper end, through which the menstrual flow was seen to come. At operation the mass was found to be a cyst of the urachus containing clear fluid. The cyst was connected to the bladder by means of a cord and the upper end lay just beneath the umbilicus. In addition the uterus was found to be bicornate, both horns lying below and adjacent to the cyst wall. The cyst lining was removed and the cavity was closed by buried sutures; the patient made an uneventful recovery.

The author reviews rather thoroughly the pathogenesis of these cysts. The epithelial lining of the urachus, according to Wutz, grows steadily up to the 25th year, and in about one-third of the cases cystic dilatations of the canal are present. He also found that the vesical orifice of the urachus is guarded by a transverse valvular fold. Others have found that in a considerable number of cases, the upper wall of the bladder presents a diverticulum of varying depth, sometimes even as far as the umbilicus. A urachal mesentery is not uncommon. Cysts of the urachus present themselves in four different types: (1) with fistulæ; (2) primary cystic fistulæ communicating with either the bladder or the umbilicus; (3) pure urachal cysts; (4) secondary cystic fistulæ, developed from pure cysts which have acquired communications with the bladder or the umbilicus. The author guards against the temptation to call all cysts in the neighborhood between the bladder and the umbilicus, urachal cysts. Many of these are merely cases of encysted peritonitis, tubercular or otherwise.

The Effect of Scarlet Red in Various Combinations Upon Epitheliation of Granulating Surfaces. J. S. DAVIS, Baltimore, *Johns Hopkins Medical Bulletin*, June, 1909.

The author based his experiments upon the observation that when scarlet red is injected subcutaneously there ensues an extraordinary proliferation of the epidermal epithelium. The chemical was applied in the form of an ointment. The ointment was prepared by rubbing the scarlet red with a small amount of olive or castor oil and mixing this mass with a base consisting of either the U. S. P. boric zinc, iodoform or blue ointments. Usually an 8 per cent. strength of scarlet red was employed. The ointment is applied on a soft linen rag to the epithelial surface, or if the wound is small to the entire ulcer. The healthy skin is protected by a thin coating of vaselin up to 1 c.m. of the edge of the ulcer, for the reason that scarlet red is irritat-

ing to the healthy skin. Rather remarkable results were obtained. Ulcers of months' or even years' duration healed rapidly. Its effects are particularly brilliant in long standing varicose and specific ulcers of the leg. Even skin grafts appear to be very favorably effected. The author emphasizes the importance of the proper application of this method. No unfavorable consequences were noted.

Biological Investigations Upon Cancer of the Stomach (*Biologische Untersuchungen über den Magenkrebs*). Preliminary Report. PROF. SPIRO LIVIERATO, Genoa, *Berliner Klinische Wochenschrift*, April 26, 1909.

Livierato tested the stomach contents of patients afflicted with gastric cancer for its power to cause deviation of the complement against a salt solution extract of carcinoma and sarcoma. He obtained positive results in eight cases. Six control cases showed no complement deviation. The author believes this test will prove of value in the early diagnosis of gastric cancer.

Cultivation of the Spirocheta Pallida. (*Züchtung der Spirocheta pallida*). J. SCHERESCHEWSKY, Breslau, *Deutsche Medizinische Wochenschrift*, May 13, 1909.

The author claims that he has finally obtained cultures of the spirocheta pallida. The medium is made from horse serum which has been evaporated at a temperature of 50 degrees C. to a jelly-like consistency. The culture is made by inoculating the medium with a small fragment of syphilitic tissue. The spirochetæ developed in three to five days at a temperature of 37 degrees C. He has not as yet been able to obtain pure cultures. The illustrations appear to bear out the author's contentions.

The Transfusion of Blood as a Therapeutic Agent with Report of Transfusion in a Case of Pellagra. H. P. COLE, *Southern Medical Journal*, April, 1909.

The report of this case is highly interesting as showing the therapeutic possibilities of this procedure. The patient was a negress suffering from an acute form of pellagra, whose condition was so grave that death appeared to be imminent. In fact, this patient was one of two of equal severity selected to the transfused; the untransfused patient died the day of operation upon the other patient. The donor was a negress who had recovered from a severe attack of pellagra over a year before. Within a day or two after the transfusion a marked improvement was noticeable and to-day the patient is perfectly well.

Fracture of the Carpal Scaphoid, With a Report of Three Cases of Fracture, One Case With a Congenitally Divided Scaphoid, and One With an Absence of the Os Centrale. ALLEN B. KANAVEL, *Quarterly Bulletin of Northwestern University Medical School*, March, 1909.

The patient gives a history of a fall upon the hand similar to that given in cases of Colles' fractures. There is pain and inability to move the wrist and on examination this is found to be tender and smaller, especially on the radio-dorsal side. It is characteristic to find the tenderness located exactly over the scaphoid bone. There may be effusions into the radio-carpal bursa. There is no crepitus or ecchymosis and ordinarily the diagnosis of a severe sprain is made. The x-ray examination will confirm the diagnosis. If untreated, pain and tenderness persist for some weeks and permanent disability may ensue with limitation of movements of the wrist. Extension gives most pain. If the case is seen early, treatment should consist of immobilization by a molded plaster-of-Paris splint which is left on for from two and one-half to three weeks. If the patient is not seen for a number of weeks after the injury, immobilization should be tried for four weeks at least, supplemented by gentle massage and passive motion. Then for two weeks the patient may be allowed to use the hand freely but not violently. If at the end of this time the wrist is no better, operation is indicated. Usually the proximal fragment is removed. Incision is made on the dorsum, to the inner side of and parallel to the extensor carpi radialis longior tendon. The incision is carried directly down to the scaphoid between the extensor communis and the extensor carpi radialis longior.

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THE CANCER PROBLEM FROM A SURGICAL VIEWPOINT; WITH A POSSIBLE EXPLANATION OF THE REMARKABLE FREEDOM OF THE DUDENUM FROM CANCER INVASION.*

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The proportion of cases of malignant disease which I have seen during the past year has been much greater than in my previous experience. The fact that nearly all these cases were advanced beyond all hope of cure, or even palliation, is very depressing. It is all very well for the surgeon to lay the blame for this state of things on the medical men, but I doubt very much whether increased vigilance on the part of the medical practitioner is going to lower the present mortality from cancer to any very great degree. Popular instruction on the subject of cancer may bring the laity into better co-operation with the physician in the matter of the early diagnosis of malignant disease and the intelligent consent to proper operative treatment. But it is human nature to procrastinate, especially when the alternative is the dreaded surgeon's knife. I doubt whether we shall ever be able to bring a large proportion of individuals to assent to early exploratory operation for cancer of the stomach in its so-called curative stage (before it has a distinguishing symptomatology), and I am also sure that no considerable proportion of women past forty are going to subject themselves to examination every three months for the early detection of possible cancer of the uterus as has been proposed. With the surgical cure of cancer of the breast the possibilities are greater, the disease being more accessible here. The thing for the whole profession to do is to unite in a campaign for the discovery of the cause of cancer, and when the discovery has been made we shall be in a strong position to advise the laity as to prevention and cure, and secure co-operation. A great warfare against tuberculosis is now being waged, and profession and laity are

uniting in intelligent action which will be productive of great results. The cause and the cure of tuberculosis are now well known, and the solution of that problem is clear. But not so with cancer, which without question is the greatest problem before the medical world.

Is the surgeon doing his full share towards the solution of this great problem? The criticism has been made that his sole interest in cancer lies in the question, "Can I cut it out?" The disease has been largely relegated to the surgeon, and if the criticism be just, he has not studied it on the broad lines which will go towards an early solution of its cause. He in turn has relegated the problem of its genesis to the pathologist, who also is circumscribed by the problems pertaining to its peculiar cell-phenomena, and apparently has brought us little further than we were a half century ago towards the clearing up of the question. It would seem that only by combination of all branches of the profession in the bringing together of certain definite data, on broad lines, can a possible early solution of the mystery be expected. On the surgeon, therefore, must lie the largest measure of responsibility, because the largest number of cases of malignant disease come into his hands. What few suggestions I have to offer, I fear will seem very inadequate, but if they help to stir up a perennial interest in us in the matter of what is required of surgeons in the elucidation of this terrible scourge, they will have served their purpose.

THEORIES OF THE GENESIS OF CANCER.

Two general theories rule in cancer research today, the theory of cell autonomy (in which no external stimulus is recognized as necessary to the growth of the cancer cell) and the parasitic theory, in which it is maintained that an external micro-parasitic cause is required to explain the phenomena of cancer occurrence and growth.

Under the first head belong the theories of Cohnheim, Ribbert, Beard and others. Cohnheim held that neoplasms originate from "cell rests"—cells misplaced during embryonic development, and which have failed to undergo a normal atrophy.

* Read before the Brooklyn Surgical Society, February 4, 1909.

This theory did not explain why it is that not all the abundant cell-rests which we may encounter in the human body take on tumorous growth, nor why they so suddenly take on such growth after remaining latent for many years. Cell misplacement, too, is not essential (Adami), as direct cancerous transformation of liver cells has been observed by reliable authorities. Ribbert's theory required cell-displacement as the first essential but held that neoplastic growth is brought about by a diminished external resistance, a lowering of the so-called "tissue-tension" which controls the multiplication of cells and maintains the tissues in normal physiologic condition. This theory, with its later modifications, contains much that seems adequate to the mind of many pathologists to essentially explain the origin of tumors.

The theory of Beard has attracted considerable notice of late and is in essence that all neoplasms originate from misplaced germ- and trophoblastic cells. The trophoblast is composed of the yolk or nourishing cells of the ovum which do not normally become a portion of the individual proper. Beard believes cancer-cells to be fundamentally identical with the cells composing the trophoblast. Normal trophoblast begins to degenerate and disappear about the seventh week of fetal life, at the same time that the fetal pancreas begins to secrete, and Beard jumped to the conclusion that the pancreatic ferments destroyed the trophoblast. The outcome of this was the suggestion that injections of trypsin and amylopsin into the system would likewise destroy the cells of cancer (abnormal or displaced trophoblast). How far this treatment has fallen short of the originator's dreams is well known.

Many more ingenious and philosophical hypotheses have been advanced to explain the origin of tumors, but it would be difficult to attempt to consider them here. None of them, however, gives us any light upon the factor which first starts the cell upon its pathological course as a cancer cell. All of them postulate a cause acting from within the organism, and certain of them do not consider the parasitic theory a valid possibility.

Adami's theory of the origin of tumors recognizes the two properties of a cell—the property of function (secretion, etc.) and the property of growth, or "vegetative" property. For some unexplained reason, cells unable, or uncalled upon, to perform function gain the "habit of growth" and lose the "habit of function." They thus become actively vegetative, as long as they continue to gain nourishment, growing lawlessly in the case of mal-

ignant tumors, which also probably excrete toxic substances, weakening the other cells in their neighborhood and leading to unrestrained growth. This hypothesis covers cells *in situ*, as liver cells with full development, or cell-rests which have never been able to assume full function.

The parasitic theory of cancer is simple as compared with the complexities of the cell autonomy theory, and perhaps, as suggested by Ewing, the conception of an invading parasite is crude when placed alongside of it. But while the laboratory worker finds it difficult to accept, it is the theory which explains most to one who looks at cancer and its natural history, on all sides. I shall enumerate the principal points of evidence in favor of the infectivity of cancer:

1. Contact inoculation has been many times observed,—lip to lip, tongue to gum, one labium majus to the other, the infection of a trocar puncture after tapping for cancerous ascites, etc.

2. *Cancer à deux*, wife to husband, patient to nurse, etc., of which a considerable number of authentic cases are reported.

3. Cancer districts, where the disease seems endemic over a period of years. The observations of Behla are most striking, and will bear repeating here. Behla made special study of the house incidence of all cancer deaths in Luckau, a small town in Prussia, which comprises a stationary population of 5,000, for a period of twenty-two and a half years. During this period, about one in 25 of the total deaths of the whole town was due to cancer. The central part of Luckau, which is low-lying and surrounded by ditches, comprising 3,000 inhabitants, furnished 65 cancer deaths. Of its 415 houses, in 33 there had been a single cancer death; in 10, two such deaths; and in 4, three cancer deaths. Its eastern suburb Kalau, which is also low-lying and marshy, being intersected by irrigation canals for market-gardening, comprising 1,000 inhabitants, furnished 73 cancer deaths, or 1 in 9 of its total mortality. Of its 127 houses, in 45 there had been a single cancer death; in 9 two cancer deaths; in 2, three such deaths; and in 1, four deaths. The cancer mortality of this suburb was four-fold that of the central part of Luckau. Of the 40 houses comprising its main street, only 5 were without at least one cancer death; and 56 of the total 73 cancer deaths occurred in the houses of this street. In curious contrast with the foregoing, the high-lying and dry suburb of Sando, comprising 1,000 inhabitants, had not a single death from cancer during the whole twenty-two and a half years.

Similar convincing observations have been made in small towns in this country.

4. Cancer houses. On every hand instances are reported where several cancer cases have occurred in close succession in the same houses. Adami lays no weight upon this, holding that, by the law of chance, an occasional house may show an excess of cases of cancer, as it might show an excess of twin births.

5. The rapid increase in the mortality from cancer in recent years. When all the arguments *pro* and *con* are summed up, there is no question that cancer is very markedly on the increase. The post-mortem statistics of old-established hospitals in Europe reveal an increasing ratio of cases found to be cancerous at autopsy. In San Francisco, the relative number of deaths from cancer increased seven times in the thirty-two years from 1866 to 1898. In Boston, the rate trebled from 1863 to 1887. In New York State, the rate almost doubled in eleven years. In Germany, the deaths from cancer in hospitals in 1879 were 6,330; in 1889, the number had risen to 24,000. It is now some 40,000 or more. It is also attacking at an earlier age, and attacks more men. In England, between 1851 and 1860, the male death rate from cancer was 195, as against the female death rate of 434. In 1901 to 1905, the male death-rate had risen to the high figure of 723, as against 997 for the female death-rate. At this rate of increase, the disease will soon be as prevalent among men as women. There is a remarkable decrease in tuberculosis over the same period, the death-rate from tuberculosis declining one-half, while the death-rate from cancer trebled. Williams believes that the massing of the population in cities has made conditions favorable for the development of cancer, and that the relative increase of the disease in men is due, also, to the fact of urbanization, it having changed the natural habits of men more than women to indoor occupations, lack of proper exercise, excess of food, etc. The decline in the prevalence of tuberculous diseases is ascribed to better food and improved hygienic conditions, while the well-fed and well-housed seem more prone to cancer. The world over, statistics point unmistakably to a great increase in cancer.

6. Heredity. I am convinced, and I believe that most medical practitioners of experience are convinced that heredity plays a part in cancer. The great frequency with which we obtain a history of cancer among the blood-relatives of our cancer patients cannot help but impress us with the analogy in respect of heredity to tuberculosis. That there is a hereditary predisposition to cancer in some

10% to 20% of cancer patients, is now widely accepted, although denied by some.

7. Metastasis. Park believes that a strong argument in favor of the exogenesis of cancer is the occurrence of metastases and its termination thereby, and this although the cell with its contents is transported, and not the germ alone. Every metastasis has all the force and significance of a genuine auto-inoculation.

8. Experimental inoculation. Transplantation of malignant tumors among mice and between other animals of the same species has been carried on successfully by many investigators. The discovery also by Gaylord and Clowes that a considerable percentage of animals recover spontaneously from inoculation tumors has been most significant. They also demonstrated that such animals are then immune, and that their blood also exerts a definite immunizing effect upon animals in whom it is injected.

9. Cancer epidemics among animals. It has long been shown that cancer may occur endemically in brook trout hatcheries, and that when healthy fish were introduced into infected pools, they soon acquired the disease. Endemic cancer among cattle has been noted by careful observers. Old cages, in which rats with sarcoma of the thyroid had been kept, infected other rats with the same disease months afterwards, after the cages had lain idle.

Other clinical and experimental evidence can be readily adduced, but we have not time for it here. We have sufficient to show that the parasitic theory forms an explanation for much that we receive little light upon from the histologist confined to his theories of cell autonomy. Many analogies may be struck between cancer and tuberculosis, leprosy, and other infectious diseases, in some of which the micro-parasitic cause which we know to be present has not yet been found.

To the surgeon, cancer in its practical aspect is an infection, purely local at the outset and then reaching out along the lymphatics, taking up residence in neighboring lymph nodes, and later extending to distant parts. If he would treat it successfully he must eradicate it while it is still local, sweeping widely clear of the involved area, lest he open up areas of infection, and reinfect and plant the germs in the fresh tissues, producing involvement more widespread and rapid in its advance than before. Tenacious adherence to this important principle of surgical treatment, following the leadership of such men as Halsted, has made what success surgery has so far accomplished in cancer. To the surgeon, then, the theory of the infectivity of cancer is a

good working hypothesis. It would seem far better that he should accept it, and by his personal contact with it bring to light as many facts bearing upon it as possible, than to wait for the pathologists to explain the cause of the cell-changes in cancer. By the same token he may look forward to the cure of cancer ultimately by other means than surgery.

The conclusions of a scientist of the depth and breadth of Adami may well be included here. He says: "It is not something from without that determines the continued growth (of the cells), not an external stimulus, nor again a diminished external resistance. An external stimulus, it may be, starts the cells on that path which leads eventually to their assuming neoplastic properties; diminished external resistance may well favor active neoplastic growth; nay, more, it may well be that cells of a malignant type afford secretions inhibiting the growth, by depressing the vitality, of surrounding tissue cells. But all these are subsidiary. What is of primary importance is that the cells giving origin to an [ordinary] new growth are so modified that the energy acquired by the assimilation of food is not in the main discharged in the performance of function, as in the healthy cell in normal relationship, but is characteristically retained and accumulated for the purposes of cell growth and cell multiplication. . . ."

"It is obvious, in the first place, that we hold that little is to be gained from the search for any parasitic cause. Even if found, we believe that once the cancer has taken an active growth, the mere destruction of the parasite would not modify the properties already impressed upon the cell."

He further states that the possibilities in treatment which suggest themselves are along the lines of active immunity produced by extracts from the removed primary growth which might prevent recurrence and bring about the atrophy and disappearance of metastases; and along the line of passive immunity, by destruction of new-growths with drugs or animal products, or agents like the x-ray and radium. However inaccurate the reasoning that led Beard to suggest the use of the pancreatic ferments, there is evidence that in certain cases these ferments act upon the cells of malignant growths, leading to their destruction and absorption, whereas they do not influence similarly the healthy cells.

CANCER OCCURRENCE IN THE ALIMENTARY TRACT.

I have long been interested in the remarkable freedom of the duodenum from the invasion of cancer. The duodenum, as far as the papilla, is to all intents and purposes a part of the stomach. And yet cancer of the duodenum is extremely rare, while

cancer of the stomach is the most frequent form of cancer, forming between forty and fifty per cent. of all cancers. Schlesinger found only seven primary cancers of the duodenum in 25,000 histories of cancer. Rolleston collected only 41 cases in the literature.

It is quite generally accepted that cancer develops especially in tissues exposed to long-continued irritation, and in other traumata, scars, chronic ulcers, etc., of long standing. This so-called "precancerous" condition in the stomach is furnished by chronic gastric ulcer, and patients in Mayo's clinic (according to Graham) give a history of antecedent ulcer in 50 per cent. of cases, and in those cases in which partial resection of the stomach was done, 62 per cent. of the specimens showed evidence of an ulcer base. Moynihan states that over 72 per cent. of a series of cases seen by him gave evidence of previous gastric ulcer. Mayo states, also, that duodenal ulcer is more common in his experience than gastric ulcer, in the proportion of above 60 per cent. of the former to about 40 per cent. of the latter. In 1,112 operations on the stomach and duodenum, he has observed but one instance of duodenal ulcer becoming carcinomatous. He has seen, all told, but three other instances of apparently primary carcinoma of the duodenum, although he has in five cases known gastric cancer to develop on the edge of a duodenal ulcer which involved the stomach at the pyloric ring. It has been very interesting to me to note, often, how gastric cancer will extend along the stomach to the pyloric ring, and then stop suddenly short in its progress in that direction, not at all involving the duodenum.

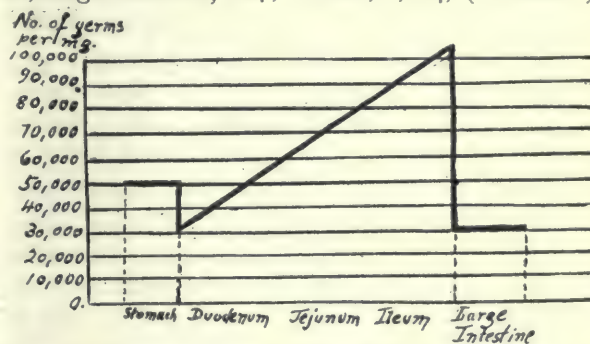
The most striking difference in the involvement of the duodenum by cancer as compared with the stomach has received as yet no attention, beyond the statement of the fact, and an adequate explanation of this difference would be going a long way towards solving the cancer problem. Either it is a mistake that ulcer often forms a precancerous stage in the stomach, or there is lacking in the duodenum the essential cause which gives origin to cancer. There is nothing in the tissue formation of the stomach and of the duodenum to explain the great difference, and no one has shown that misplaced histological cell-elements which might give rise to new growths are vastly more common in the stomach than the duodenum. Can it be explained on the theory that cancer is due to a parasitic cause? It would seem that this would form a reasonable explanation, and that the intestinal secretions are the inhibiting cause which prevents the frequent occurrence of cancer in the upper intestinal tract.

Cancer predominates in the alimentary tract, the U. S. Census Report for 1900 showing that two-thirds of cases of cancer, including both sexes, originated in the alimentary tract. This may go to show that the infection is taken into the mouth, perhaps upon uncooked vegetables and other food, and penetrates the epithelium of the digestive tract far more easily than it can the barrier epithelium of the outer surfaces of the body. Lesions of the mucous membrane form grounds on which the invader may penetrate the cells and inaugurate the tumor growth. It has been shown by Herter that in elder life a large majority of persons give evidence of distinct putrefactive processes in the digestive tract, with acute derangements, during which it is possible that slight but persistent damage may be done to the epithelial and other structures of the intestinal mucosa. It is very probable that cellular alterations occur in the digestive tract in the later years of life, allowing of increased bacterial activity of various kinds. Elder life must bring about a kind of normal involution. Individuals in that period are not ill, but in order to keep fairly well, they have to be careful in their habits of eating and living. I see no reason why these senile changes should not let down the bars to the cancer microorganism and explain the greater incidence of cancer in advanced life, although cancer may appear at any period of life.

It has been shown by Cushing, that the upper part of the intestinal canal contains much less germ-life than the stomach, and that it is often practically sterile, as shown by lack of sepsis following gunshot wounds of that part of the bowel. As the ileocecal valve is approached, a gradual rise in the number of germs is noticed, until the maximum number is reached at that point. In the large intestine there is a marked falling off again, somewhat increasing in proportion to the distance from the cecum. The accompanying diagram shows in a general way the results of experiments on dogs. The dogs were killed three hours after a meal of bread and meat. The lack of bacteria in the duodenum has been ascribed to the antiseptic properties of acid gastric juice, but as this is soon neutralized by the alkaline pancreatic secretion and the bile, it would seem more likely that the pancreatic secretion and the bile are involved in the germ inhibition. As I have said, the pancreatic ferments in certain cases act upon the cells of malignant growths leading to their destruction and absorption, but do not destroy the healthy cells. In these facts may lie not only the explanation of the fact that cancer of the stomach so frequently stops short at the pylorus in its growth towards the duodenum, but also of the extreme

rarity of its origin in the upper intestine.

It is an interesting fact that 85 per cent. of intestinal tuberculosis,—and here we know the infection gains entrance with the ingesta,—occurs in the ileocecal region where the bacteria of the bowel are most numerous. Actinomycosis is most frequently found there. It is true that primary cancer is found considerably more frequently in the colon, but this may be explained by the greater amount of contributing irritation of the denser fecal contents of the colon and the reduced amount of pancreatic secretion. The numerical incidence of cancer throughout the whole digestive tract is interesting, and suggests ingestion infection. Of 20,544 cases of cancer in Prussian Hospitals in 1895 and 1896, in 10,537 was the alimentary tract involved, as follows: Tongue, 269 times, mouth and throat, 192; esophagus, 1,011; stomach, 4,238; small intestine, 20; large intestine, 224; rectum, 1,204, (Hiemann).



Gilbert and Domenici Diagram Showing the Relative Number of Bacteria Present in the Contents of Different Parts of the Alimentary Tract.

The small proportion of intestinal involvement as compared with cancer in the alimentary tract above the pylorus is certainly a fact requiring explanation. The additional amount of mechanical trauma connected with the ingestion of solid food might in some measure explain it were not the disproportion so great, and were not our recent knowledge of chronic ulcer in the stomach as a predisposing cause of cancer so complete.

The additional knowledge of the greater incidence of ulcer in the duodenum cannot be disputed, as it has been established by most competent surgeons. It is true, also, that benign tumors are rare in the intestinal tract, but they are likewise rare in the stomach. I cannot bring myself to believe, either, that benign and malignant tumors require the same cause to explain their origin, as the orthodox pathologist would insist, or that there is not greater analogy between syphilis and cancer than between a lipoma and cancer. It is, of course, a difficult matter to classify all new growths under the two clinical heads of benign and malignant, but it is also difficult to make a histological classification of tumors. In

the light of future discovery, our general terms of classification will be differentiated into more accurate special classification, the basis of classification probably changing. This has been true in all departments of science, in past time, things apparently similar having been determined to be different in the light of increased knowledge.

I am often confronted with the layman's classification of cancer, as I suppose we all are. When I use the terms cancer and tumor synonymously, he almost invariably corrects me and wishes to know whether I were referring to a tumor, or something which is very different in his mind,—cancer. I confess that I am inclined to think that he has the better of me in his separate classification. Syphilis, tuberculosis, leprosy and cancer are far more closely related clinically than are lipoma and cancer.

For practical purposes, it seems to me that the classification of tumors by Lubarsch more nearly meets our clinical needs: (1) Those which differ from the parent tissue in the arrangement of their elements, etc., which disposes of the teratoid new growths; (2) those which show a certain autonomy (fibromata, lipomata, etc.); and (3) those which are wholly emancipated from the physiological laws of life and rule in the tissues in total lawlessness of growth (carcinoma, sarcoma). Instead of looking for a single etiological explanation of these, three provisional divisions of tumors, it may be that a distinct etiology (say) in each instance may place many of the present deeply philosophical theories in proper relation with all the facts. That the last group of tumors has the same essential etiology as the first, I cannot believe. That they are both subject to certain similar laws of growth, I have no doubt. Park has asked, "What explanation can be offered for a sudden local epithelial rebellion except an invasion by some intruder from without?" and his question seems to permit of but one answer.

It will be noted in our statistics of cancer in the alimentary tract that growths occur in the rectum in the proportion of about four-fifths of all intestinal cancers. This would be explained also by the increased trauma in that region with the lack of the pancreatic secretions. Tuberculosis, also, is common in the rectum.

Interesting facts in regard to the geographical distribution of alimentary cancer, and its occurrence in different races, seem to point to its parasitic origin. It is almost unknown—if we are correctly informed—in many tropical countries, which would hardly be the case if it were due to a constant etiological factor within the body itself.

The possibility of the early diagnosis of malignant tumors through a serum reaction has been investigated by Weil, Crile, and others of late, and as yet the results are not of practical diagnostic application, but give promise of future possibilities. This test involves the production of hemolysis, *i. e.*, disorganization of the red blood corpuscles through the loss of their hemoglobin. The test is determined by noting the result of suspending normal red cells in the patient's serum and suspending the patient's cells in normal serum. The technic is difficult and not yet fully worked out. It has been shown that the sera in cases of cancer, tuberculosis, syphilis, and certain other conditions contain hemolytic properties. It may be that in this fact lies to some extent the explanation of the cachexia and anemia in late cancer. The results reported by Crile show that of 591 individuals studied, 211 normal subjects showed no hemolysis, 71 cases of pyogenic infection showed hemolysis in 10 per cent., 55 benign tumors no hemolysis, 153 cases of cancer hemolysis in 85 per cent., 11 post-operative cases with recurrence 100 per cent., 37 post-operative cases without clinical recurrence 3 weeks to 15 years after operation no hemolysis, and 52 cases of tuberculosis showed reversed hemolysis in 92 per cent., that is, the corpuscles of tuberculous patients were hemolyzed by normal serum. Crile's conclusion is that from the clinical standpoint hemolysis offers additional evidence, which may be used in the diagnosis of cancer or tuberculosis. Only an occasional early case of cancer failed to show hemolysis.

In concluding this somewhat rambling excursion into the great field of the cancer problem, I can only emphasize my feeling that it is incumbent on us as surgeons, not alone to bend our energies to the early and complete eradication of the disease by operation, but to do our part towards the thorough study of the disease in all its aspects. We cannot all do research work in the laboratory, but we can coöperate with the research laboratory in the use of the material at our command, and be on the watch not only for the operative case, but for the non-operable case which will present evidence of value in the elucidation of the cancer problem. Special hospitals for cancer cases, or special departments of hospitals, should be advocated, and a great service rendered a vast number of helpless incurables who are now refused by practically all our hospitals, thereby, also, promoting the systematic gathering of valuable data bearing on the cause and cure of cancer. It would probably assist us, also, in the matter of laying down rules for the

better selection of cases for operation, as I am convinced that much harm is now done to both surgeon and patient from the many operations on cases really inoperable.

The matter needs our interest fully as much as the matter of the great white plague. In New Jersey, in 1900, the deaths from cancer were more than those from tuberculosis. In New York State, in 1907, more than half as many deaths from cancer occurred as compared with tuberculosis, 7,000 as against 13,000. In the whole country there are approximately 80,000 cases of cancer to-day. One woman in eight who reaches her thirty-fifth year dies of cancer. A disease entailing so much torture to the patient, and such expense and misery to those who care for him, should receive more attention from the government. New York was the first state to appropriate a modest sum to maintain a cancer research laboratory, and I am not sure that any other state has followed its lead. The great need now is for the cancer hospital. This matter should be pushed before the public, and it is incumbent on the surgeon to do it.

1145 DEAN STREET.

EXCISION OF STERNUM FOR SARCOMA.*

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This case is presented as being rather unusual in the location of the tumor as well as in its thorough removal. Also because it suggests the question whether the outlook is sufficiently encouraging to justify the operation in cases of bone sarcoma when the procedure is necessarily a formidable one involving risk to life and the probabilities of recurrence or metastasis, or both, are so great.

Bessie R., aged 46, was admitted to the Beth Israel Hospital on January 7, 1909. She is married 26 years, had 5 children and now is 3 years after menopause. Has been coughing and subject to spells of dyspnea for 15 years, and says that recently she has lost appetite, has been losing flesh and feels generally weak. She has an enlarged left lobe of the thyroid for 17 years, which she says never bothered her. Three months ago she began to have severe sticking pains in the chest to the left of the sternum and then noticed a swelling the size of a small nut to the left of the middle line. This has been growing in size and becoming more painful.

On admission to the hospital the swelling was about the size of a hen's egg, painful on handling and distinctly fluctuating. The skin was not involved nor were there any glands palpable. Tem-

perature was 100°, pulse 116, leucocytes 8800 and polynuclears 74%. Diagnosis lay between sarcoma and tuberculous caries with abscess.

Incision over the mass disclosed a neoplasm involving the lower half of the sternum and extending to the costal articulations on either side. The sternum from the level of the second intercostal space was resected, including about one inch of each of the lower five costal cartilages on either side, that is, from and including the third costal cartilage all the way down through the costal arch. The enucleation was subperiosteal as far as possible, but when the region of the tumor was reached posteriorly, the periosteum and part of the left pleura were found involved and were removed with the tumor, the center of which was a soft gelatinous growth extending through the bone, with a posterior, as well as an anterior, projection. Copious hemorrhage from the intercostal veins behind the tumor was a marked feature of the operation, but was controlled quickly, necessitating numerous skin incisions, to raise sufficient flaps to get at the bleeding point in a hurry. The two main points were behind the sternal articulation with the third rib on either side. The pericardium was not injured. The pleural opening was occluded by sponge pressure until it could be closed, though imperfectly, by suture, which was supplemented by a gauze compress carried out through the skin incision like a drain.

With the tumor removed and the skin flaps yet turned back, there was a sight to behold that is not easily forgotten! There was a deficiency of about five or six inches in diameter in the chest wall, with its floor retracted, forming a cavity of sufficient depth to easily contain a fist; the pericardium, pleura and peritoneum were exposed, and all in motion,—the pericardium with every heart beat, which, at that stage of the operation was about 160 to the minute, and the pleura and peritoneum with every respiration. The general effect was that of a look into a busy machine shop in full action, only the clanking of the machinery was missing.

The flaps were turned in and sutured except for a small opening to carry out the end of the gauze compress over the pleural suture, as well as another strip to check surface oozing of blood.

While there was considerable shock the patient rallied well and, except for a hypostatic pneumonia, which kept her pretty sick for a few days, she made a fairly uneventful recovery. Though there was primary union of the skin edges, healing of the wound was slow on account of the retraction of the bottom of the cavity, from the overlying skin, which resulted in a pocket formation that had to heal by granulation. Now, about five weeks after operation, it is interesting to note the reformation of bone or cartilage that is going on. The costal arch has entirely filled in across the deficiency. This result may be partly due to collapse of its sides for want of the bony support removed, but evidently is mostly due to production of new cartilage on the perichondrium, which here was not removed. Above this re-formed costal arch, where the periosteum was removed with the tumor, there is no regeneration of bone, only the skin flap intervenes between the sur-

* Case presented at a meeting of the East Side Physicians' Association, February 19, 1909.

face and the viscera and, being unsupported, it moves with every heart beat and respiration. The tumor, on examination, proved to be a spindle-celled sarcoma.

About a week after operation the patient began to complain of pain about her right shoulder. Nothing was evident there on examination at that time, and, although she spoke of this pain occasionally she did not make any definite complaint of it until February 14, when an examination showed that the arm just below the shoulder joint was tender and gave an indefinite appearance of a fusiform swelling. On questioning her more closely it developed that she felt this pain even before she came to the hospital, but it was not sufficient to complain of and had stopped entirely for some time after operation. The appearance was suggestive of sarcoma of the upper end of the humerus, and a radiograph confirms that suspicion. Within the past few days there has also been noticed a small bony growth on the outer border of the scapula, which is somewhat tender and most likely another metastatic growth.

Note.—April 14, about three months after operation, the fusiform swelling on the upper part of the humerus has increased to about twice the diameter of the arm and is very painful. The tumor on the scapula has enlarged somewhat, but is not very painful. There is a small recurrent tumor at the left lower corner of the remnant of the sternum at its articulation with the second costal cartilage. The liver is large and tender. The dyspnea is considerably more marked and there is troublesome cough with occasional hemoptysis, indicating probable metastasis in both liver and lung.

TUBERCULOSIS OF THE BREAST.

The onset of the disease is insidious except when it occurs during lactation, when it is of more rapid growth. It may last for years. Only one breast is affected. . . . In the discrete variety indurated areas may be detected here and there throughout the substance of the gland, but separated apparently from the surrounding tissue. In other cases the outline is indefinite. The skin is not adherent until late in the disease. When it is, fistulæ soon form. Pain is a rare symptom early in the disease, and when present does not exist to a pronounced extent. It may be severe as a late symptom. The confluent form pursues a more rapid course, fistulæ forming early in its evolution. A mass varying in size from a hazelnut to an orange, of irregular outline, hard or soft, is found usually in the upper and outer quadrant. The axillary glands are early involved, rapidly increase in size, and may suppurate. It is to be noted that the glands do not fuse and become matted together as in carcinoma. This is of importance as a differential sign.—W. L. RÖDMAN in the *Monthly Cyclopædia and Medical Bulletin*.

SOME NOTES ON OTITIC BRAIN ABSCESS.

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Etiology.—The spread of infection from the ear to the brain is accomplished in four ways: (a) Through the tegmen tympani into the middle fossæ. (b) Through the internal auditory meatus and aqueducts into the posterior fossa. (c) Through the inner table covering the sigmoid groove which covers the sinus, into the posterior fossa. (d) Through the spread of the infection from one fossa into the next.

The extension is sometimes direct, and sometimes through the occurrence of phlebitis. All varieties of brain abscess are of infectious origin. They may be the result of infection of the pharynx, of the nasal fossæ and air sinuses, or, as in the great majority of cases, the result of aural infection.

Gross Pathology.—The abscesses occur in all gradations, from an encapsulated abscess with a distinct pyogenic membrane and a minute connection with the original source of infection, to the other extreme—a diffuse softening, a mere enlargement of the original infection.

Diagnosis.—I. If the external conditions have indicated the exposure of the dura mater, it should be critically explored for signs of brain abscess, granulations, necrosis, and fistulæ. Focal symptoms are a fallible guide to the location of an abscess. The location cannot be established until the abscess has been actually demonstrated. When a positive diagnosis of brain abscess is made before the abscess is located, or when there is indication found on the dura mater, the brain may be explored by incision or by aspiration, and a definite diagnosis and location of brain abscess obtained.

II. In peripheral infections with cerebral irritation shown by severe headaches and neuro-retinitis, the diagnosis of brain abscess is provisionally made in the absence of definite symptoms of meningitis and thrombosis, but the diagnosis is not positive until the operation for the peripheral infection has demonstrated the condition of the deep tissues. Upon the condition of these tissues rests the final diagnosis.

The cases where there is a possibility of brain abscess form a group which shows advanced temporal bone infection, with or without intracranial symptoms. In these cases the presence or absence of brain abscess cannot be demonstrated before the primary operation. The diagnosis in all these cases must be withheld until the peripheral infection has been removed surgically.

III. The diagnosis is positive when focal brain symptoms occur with a peripheral infection.

A blood count is useful to determine the presence of active infection and the resistance offered to it by the patient, but is of no value in locating the infection.

Cerebral and cerebellar abscesses differ in their symptoms in the typical cases, but in the atypical cases the symptoms are not definite enough to give any ground for differential diagnosis. The typical cases show focal signs pointing to impaired cerebral function in cerebral abscess, and impaired cerebellar or musculo-dynamic and coördinate functional symptoms for the cerebellar abscess. Optic neuritis is very apt to occur in cerebral abscess. Signs of cerebral pressure are of more frequent occurrence with cerebral abscess. Basilar meningitis is more often associated with cerebellar abscess.

Treatment is operative, and is of two kinds:

I. Peripheral exploratory operations to confirm the diagnosis, and to locate the abscess.

II. Central operation for evacuation and drainage after the abscess has been located. Exploration of all the diseased area and thorough exposure of the abscess is even more necessary than in a superficial cellulitis. The object is to obtain direct drainage rather than drainage by packing and wicks.

It is best to follow the path of infection in planning the location of drainage.

When should we operate for brain abscess? As soon after the diagnosis is made as possible.

When should an exploratory operation be done for brain abscess? As soon as indications of mastoiditis, sinus thrombosis, or meningitis call for operation.

This brings us to the question: When should we operate for mastoiditis? This we should do at the earliest possible moment when the aural inflammation appears to be beyond our control.

After-care.—This must be directed to rigid asepsis to prevent reinfection or extension of infection, preservation of drainage and slow closure of the wound. The patient must be kept quiet for a long time after complete healing is apparent, and must be under observation for a year or more for fear of recurrence.

Hexamethyltetramine (an aid or substitute for surgical treatment) given in doses ranging up to 60 grains a day, by the mouth, is a help to intracranial antisepsis.

Results of Treatment and Prognosis.—In my experience during the last two years, with eight cases, —3 of cerebral abscess, and 5 of cerebral and cere-

bellar abscesses combined,—there has been 50 per cent. of recoveries after operation. All the cases that terminated fatally were treated under special disadvantages, either from complications, lack of opsonic resistance, or delayed operation. I think the prognosis for cerebellar abscess is slightly better than for cerebral abscess, and that under favorable conditions the prognosis following operation should be for more than 75 per cent. of recoveries. The prognosis without operation is over 99 per cent. fatal.

57 WEST 53RD STREET.

SOME REMARKS ON ABSCESS OF THE BRAIN; REPORT OF TWO CASES, WITH DEATH FROM INSUFFICIENT EXPLORATION.*

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DULUTH, MINN.

MacEwen says that for the sake of convenience abscess of the brain should be divided into three stages. These stages differ from one another in a marked degree and indicate the progressive stages through which it passes in uninterfered cases.

I do not intend in this paper to treat of traumatic abscess—that is, those due to fracture of the skull or injuries to the head, but to limit our discussion to those infective brain abscesses arising secondary to acute or chronic suppurative affections of some of the adjacent cavities, such as infections of the middle ear or mastoid cells. The great majority of cases in the initiatory stage will give a history of middle ear disease characterized by purulent or semi-purulent discharge from the external auditory meatus, accompanied by more or less pain at some previous time. Other cases will deny ever having had pain or discharge from the ear, but a careful examination of the external canal will usually disclose a discharge with perforation of the tympanic membrane. The discharge is sometimes very slight and consists apparently of not much pus, but chiefly serum. The pain in the ear is first described as shooting or burning in character. At first the pain is confined to the ear, but soon extends to the temple and mastoid regions; later to the occipital and frontal regions. Pain is even felt in the frontal regions when the abscess is located in the cerebellum. As the disease progresses the pain increases until the patient complains most bitterly, often crying aloud on account of the great suffering. In other cases it is more neuralgic and paroxysmal in character, and

* Read before the Western Surgical and Gynecological Association, December, 1908.

can be relieved only by large doses of morphine given hypodermatically.

Vomiting is frequent, and bears no relation to food or to stomach disorder, and is usually without nausea. Rigors or chilly sensations are usually symptoms of the early stage. They may be severe or slight and hardly noticeable, but if looked for carefully they will be found to exist, or to have previously been present. These rigors should not be confounded with the more severe and repeated rigors of other acute affections arising from the middle ear or mastoid suppuration, such as sinus thrombosis, and are differentiated from the chills of sinus thrombosis by their less frequency and severity, together with lack of tenderness along the course of the internal jugular vein. The temperature during the first stage is only slightly above normal, not reaching more than 99° or 100° F. On the tongue is a white, thin coating and the pulse is quickened.

The initial stage usually lasts from two to six days, when the symptoms are greatly changed, the patient passing into the second stage, which is characterized by symptoms of intracranial pressure. It is in the second stage that the surgeon first sees abscess of the brain, and quite often not until the third stage of the disease has made its appearance. At this time the patient lapses into a condition of stupor or mental dulness. He does not complain so much of pain as before; his senses are dull and he passes a good part of his time dozing. He is easily aroused, however, and replies to questions slowly but quite accurately, but it is with difficulty that his attention can be held for more than a short time on account of the tendency to doze off again. Percussion over the affected side is usually painful. The pain is complained of even in this stupid mental condition. This symptom I found to have been constant in my cases. The temperature in the second stage is generally near normal, ranging from a degree above to a degree below normal. The tendency of the temperature to be subnormal is quite typical of brain abscess, and this is quite the contrary in sinus thrombosis and other acute infections with which brain abscess may be confounded, such as a meningitis, arising from a spreading infection of the middle ear.

The pulse in this stage is slow, not more than 50 or 60 beats per minute, and may reach as low as 30 or 40 per minute. The respiration at this stage is also slow, but usually regular. MacEwen says that respiration is often reduced to as low as 11 per minute, and in cerebellar abscess is slower than in cerebral abscess, often irregular and of Cheyne-Stokes character. The pressure on the cerebellum

affecting the pons, the respiration often ceases long before the heart beat does. In one case of cerebellar abscess cited by MacEwen life was prolonged for twenty-four hours by performing artificial respiration after respiration had completely ceased. Constipation is the rule, and it is often most obstinate. The urine is scanty and often retained, making catheterization necessary. It also contains albumin, which soon disappears upon draining the abscess. The appetite is lost and the patient has to be encouraged to eat. Vomiting in this stage is not as usual as in the early stage, but in some cases it does occur throughout the entire course of the disease. Convulsions sometimes occur, but are not often a feature unless the abscess is located in or near the motor regions of the brain. Paralysis sometimes occurs from the destruction of brain substance or pressure exerted upon conducting tracts. Paralysis is of importance in locating the abscess, as it is quite evident that the abscess must be quite near to the centers involved in the paralysis. The breath has a foul odor that is quite characteristic in all cerebral affections. This is a constant symptom observed in my experience in brain cases. The odor cannot be described and can only be appreciated by frequent contact with cases. It is present in brain tumors as well as acute infections of the membranes, as well as the brain itself. The reflexes are not of much diagnostic importance. Optic neuritis is often present in the latter end of the second stage, and when present is an important diagnostic symptom, although it is present in other diseases of the brain, more particularly tumor.

The third or last stage of the disease usually ends in death, when the condition is not treated surgically. However, abscesses of the brain have become encysted, remaining innocuous for years. Gowers reported a case that had evidently existed for twenty years. Death is usually due to a gradually increasing coma or to a leaking of the abscess upon the surface of the brain, setting up an acute lepto-meningitis which is rapidly fatal. Or it may be due to a discharge of the abscess into one of the lateral ventricles. In case the discharge is into one of the ventricles, the symptoms suddenly become alarming and death ensues within a few hours.

The treatment of brain abscess is entirely surgical. The operation is performed in the following manner:

After shaving the entire scalp it is thoroughly cleansed by scrubbing with soap and water and applying some antiseptic dressing over night. The dressing I prefer is a gauze pack wet in bichloride of mercury solution, 1-1,000. This may be followed

after the patient has been anesthetized, just previous to the operation, by the application to the scalp of Harrington's solution, which is left in contact with the scalp for not less than three minutes, when it is washed off with sterile water.⁴ If these directions are followed out, the scalp will be made reasonably sterile. There is no operation in surgery where greater care is required in rendering the operative field aseptic and in keeping it so than in operations upon the cranial cavity. The abdominal cavity will often tolerate an abundance of abuse and maltreatment, but not so the cranial cavity. The meningeal membranes are very prone to inflammatory processes; and the cerebrospinal fluid furnishes a most excellent culture medium when once infected, lighting up an acute lepto-meningitis that is always rapidly fatal. Knowing these facts, it is the duty of the surgeon to take every precaution to prevent infection during operations upon the cranial cavity.

If an abscess is suspected as a result of middle ear or mastoid disease, it will be necessary to open the mastoid for the purpose of draining the antrum and middle ear, if this operation has not already been done. The opening of the mastoid should be done immediately after the brain abscess has been drained, and not before. If this operation is done last, it will often avoid infecting the cranial contents. A large or medium-sized trephine opening is made over the suspected seat of the abscess and the brain explored with a medium-sized trocar. If an abscess is near the opening the brain will bulge into the opening and will not pulsate. The trocar is introduced slowly and carefully in the direction of the suspected abscess, withdrawing the stillette at every half-inch advance. If pus does not escape through the canula after the trocar has been introduced to the depth of an inch or not more than an inch and a half, it is best to withdraw it and reintroduce it, changing the direction either upward, downward, forward or backward, if pus is not reached. In case one is not successful in locating pus through the first trephine opening, other openings should be made and the brain thoroughly explored through them. The cerebellar fossa should also be explored before abandoning the operation. I have missed locating two brain abscesses within the last two years by being too timid and not carrying my exploration far enough. If a free flow of clear fluid escapes through the canula either a brain cyst or one of the lateral ventricles has been entered. Sometimes the lateral ventricles will be greatly distended with fluid, as evidenced by the large amount of fluid escaping through the canula. This has happened to me in one case and led me to believe that a brain

cyst had been entered. The distention of the ventricle in that case was due to pressure made upon the fourth ventricle by a cerebellar abscess. This symptom should always lead us to explore the cerebellum. After the abscess has been located by the trocar, the opening into it may be enlarged by passing into it a closed dressing forceps, using the instrument as a dilator, gradually enlarging the opening until the finger can be introduced into the abscess cavity for the purpose of cleaning out any semi-solid masses that may be present. Irrigation of the abscess cavity is not necessary and is dangerous. Drainage is necessary and may be accomplished by the ordinary rubber tube. MacEwen uses the decalcified chicken-bone drainage tube. These tubes are not always obtainable, and in my opinion the ordinary rubber tube will answer the purpose very well.

CASE I. Steve D., male, aged 31, was admitted to St. Mary's Hospital, Duluth, March 22, 1907, and was referred to me by Dr. Lum. He was taken ill about the fourth day of October, 1906, with pain in the left ear; and had been admitted to St. Mary's Hospital, October 19, 1906, remaining there one week. At that time a diagnosis of mastoid disease was made. He was readmitted November 2, 1906, and operated upon soon after by Dr. Lum. He evidently recovered from the mastoid trouble; a few weeks later and before leaving the hospital a swelling in the left cervical region made its appearance just below the hairy portion of the scalp. At that time I saw the case in consultation with Dr. Lum, and a diagnosis was made of abscess involving the soft part of the neck only, located at the point of the swelling. This abscess was opened by Dr. Lum a few hours later. At the time of the consultation the patient was stupid, answered questions slowly and with difficulty, had an occasional increase of temperature above the normal, but most of the time it was normal or subnormal in character. He improved so much that he was again discharged from the hospital, February 28, 1907. When readmitted, March 22, 1907, he was suffering from severe headache, making necessary large doses of morphine hypodermatically. He was mentally dull and answered questions slowly but usually correctly. The tongue showed a whitish furred coating; the breath was very offensive; temperature 97°; pulse 60. He vomited almost daily after the last admission; the vomiting seemed to have no connection with the taking of food. The temperature never reached a higher point than 99°, and it was usually taken per rectum. Pain continued and was referred to the left side of the head, being also reflected toward the frontal region. At this time percussion over the temple and parietal regions on the left side was painful. There was no discharge from either of the old wounds; neither was there any discharge from the ear. There was optic neuritis and mydriasis on the left side. A diagnosis of brain abscess was made April 3, 1907.

Operation, April 4, 1907: The first trephine opening was made over the left cerebellar fossa, the dura incised and a trocar passed into the cerebellum in two directions. No pus or other fluid was found. This opening was closed after replacing the button of bone removed by the trephine. Another opening was then made in the skull by a good-sized trephine about $1\frac{1}{4}$ inches above the external auditory canal; the dura bulged into the opening and pulsation was absent. The dura was incised and the trocar passed into the brain inward and downward for about $1\frac{1}{2}$ inches. Nothing escaped through the canula. It was then reintroduced directly toward the lateral ventricle for a distance of about $1\frac{1}{4}$ inches, without result, and further exploration of the brain was abandoned. The wounds were closed by replacing the button of bone, and without drainage. The patient died April 9, 1907.

Autopsy: The cerebellum was normal. There was an abscess in the lower temporal lobe of the left side, about $\frac{1}{2}$ inch from the surface, 3 inches long by 1 inch deep, containing about four ounces of greenish creamy pus. The trocar used in exploring the brain at the operation had missed the anterior horn of the abscess by only $\frac{1}{4}$ of an inch, and if it had been directed posteriorly a little more it would have entered the abscess cavity.

This case emphasizes the necessity of more thorough exploration of the brain in suspected abscess. If we had not been quite so timid and had made our exploration a little more thorough, the abscess would have been discovered, and the patient's life probably saved.

CASE II. John B., aged 29, admitted May 17, 1907. Family history negative; also personal history, as far as any specific disease was concerned. He was taken sick in February, with earache, lasting two weeks. Pus discharged from the ear four or five days. He had been ill six or seven days when admitted to the hospital. He then complained of being very dizzy. He gave a history of having had headache some time in the beginning, but there was no headache on admission. Vomits nearly everything taken into the stomach; ptosis of the left eyelid; pupils react normally; sees double when looking with both eyes; tongue coated; breath foul; temperature normal; pulse normal; bowels constipated; appetite poor. The temperature at no time during his illness has been more than 98.4° , and it has been subnormal most of the time. The pulse ranges from 60 to 80 per minute; bowels very much more constipated; vomiting continued at intervals throughout the entire course of the disease, often being induced by assuming the upright position. The vertigo greatly increased as the disease progressed, becoming so marked at times that the patient could not stand without falling. About thirty days after admission to the hospital, and thirty-seven days from the onset of the disease, a diagnosis was made of abscess of the brain, probably located in the cerebellum.

Operation: A trephine opening, medium-sized, was made about $1\frac{1}{4}$ inches above the external audi-

tory canal. When the dura was exposed it bulged into the opening; pulsation was absent. The dura was incised at this point; a trocar was inserted about $\frac{1}{2}$ inch; when the stillette was withdrawn a copious flow of clear fluid occurred. This fluid was evidently under quite a pressure, as it spurted through the canula. The amount evacuated was about eight ounces. Believing that the trocar had entered a brain cyst, further exploration was not deemed advisable, so the cyst was treated by drainage. Death occurred about thirty-six hours later.

Autopsy: The brain was removed, the surface appearing normal except over a small area corresponding to the petrous portion of the temporal bone on the left side. On section of the brain it was discovered that the trocar had entered not a cyst, as supposed, but the left lateral ventricle, greatly distended by cerebro-spinal fluid. The pressure of the fluid had caused a thinning of the cortical substance of the brain over the ventricle, until it was not more than one-quarter inch thick. Upon section of the cerebellum an abscess of the left lobe was discovered containing about one ounce of thick, greenish-yellow pus. The abscess cavity was heart-shaped and contained considerable solid matter.

Although we had suspected cerebellar abscess for the reason that the most tender point on percussion was over the parietal bone, we opened into the parietal region first, instead of the cerebellar fossa, and laboring under the impression that we had drained a brain cyst, the cerebellar fossa was not opened. The abscess had apparently made pressure either upon the fourth ventricle or the aqueduct of Sylvius in such a way as to prevent the free and equalizing flow of the cerebro-spinal fluid, consequently causing the distention of the lateral ventricle. This symptom the great distention of the lateral ventricle, if we had recognized it, should have led us to explore the cerebellum at once.

In conclusion, I desire to make a plea for a more thorough exploration of the brain in suspected abscess.

From the experience, observation and study of these cases, I am satisfied that, as a rule, the surgeon of ordinary experience is far too timid in his exploration of the brain. These cases are hopeless unless the abscess is located and drained. Knowing this, we are justified, in my opinion, in undertaking almost any operative procedure in our efforts to locate and drain the abscess. I remember the late Dr. Fenger demonstrating what he termed his systematic exploration of the brain for suspected abscess before the Surgical Section of the American Medical Association, at its meeting in St. Paul, 1901. I was surprised at the time with what seemed to me Dr. Fenger's reckless disregard for the brain. He used a skull to demonstrate his method, with numerous trephine openings through which he in-

troduced his trocar or aspiration needle, passing it first in one direction, then another, if pus was not found, until the entire hemisphere had been explored. I am now of the opinion that his method is the proper one, and that we are more apt to err upon the side of caution than otherwise. In my future cases I am determined that my exploration will be sufficiently exhaustive that abscesses like the last two will not be overlooked, believing that exploration of the most searching character is not only justifiable, but demanded, in order that the lives of at least some of these unfortunates may be saved.

A BRIEF REVIEW OF THE APPLICATIONS OF ROENTGEN RAYS IN DIAGNOSIS.*

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When the x -ray was new, some twelve or thirteen years ago, printers' ink was used unsparingly in exploiting the wonderful discovery and its possibilities in diagnosis. The casual reader was led to believe that it was a wonderful light with which we could photograph anything we desired to see, no matter how securely hidden from our unaided eyes by brick walls, by the most elaborate creations of the sartorial art, or by the skin and fascia and other tissues with which Nature has surrounded our vital organs. The expression, "photography of the invisible," was current not only in lay journals, but in those of scientific pretensions as well. For a year or two every physical laboratory was the scene of experiments with the new rays which Roentgen had discovered and which Crookes and other experimenters had produced during the preceding 20 years and failed to recognize.

The list of alleged "first successful radiographs made in this country" is astonishingly long. These early radiographs were exceedingly indistinct shadows of the bones of the hand or of dead mice, or else some metallic object like a key, produced by exposing a photographic plate for minutes or hours to the feeble rays obtained from the imperfect appliances then available. It was predicted that every medical man would soon have in his office a little machine enabling him to obtain views of the human body such as hitherto had been possible only at the autopsy table or the anatomical laboratory. These predictions have failed to materialize.

After such over-enthusiastic statements had ceased to appear as news items, it was found that

the imperfect radiographs of that day were proving very useful in the diagnosis of a few bone injuries, and in the localization of foreign metallic bodies. At this time the period of active investigation had passed and the practical application of the rays had been taken up by a few physicians whose tastes inclined toward physical laboratory work, and by a few engineers, photographers and electricians to whom we are indebted for the development of many practical details. These pioneers were able, by making exposures of from three to twenty minutes to obtain radiographs of the extremities, which were useful in the localization of needles, bullets, etc., and the diagnosis of fractures and dislocations.

The fluoroscope was used extensively not only for diagnostic examinations, but for testing the rays emitted from the tube, the penetrating power of which was very changeable and required constant adjustment. Little was known of the physiological effect of the rays and the seriousness of the injuries they produced was not suspected. It was then the almost universal custom of the operator to test the rays by examining his own hand in the fluoroscope. When he made a fluoroscopic examination of an arm or a leg he held the fluoroscope with one hand and the object he was examining with the other. He noticed that the skin on the backs of his hands became irritated and uncomfortable, but expected this condition to disappear like sunburn. This was the beginning of the long series of injuries to operators which have of late been proving so fatal. Those who have taken up the work within the last five or six years have practically all escaped serious injury, and there need be no repetition of the tragedies which were a consequence of the first years of experimental work.

Because of the long exposures then necessary for making radiographs, and the imperfect control of the quality of the rays, some exceedingly severe x -ray injuries appeared in a few patients submitted to examination. These unfortunate accidents and the uncertainty of success of the early attempts at radiography, caused a fear and distrust of the x -ray which has not yet entirely disappeared. However, confidence began to return, and with the improvement of appliances and technic which followed, the field of usefulness of the rays has been steadily enlarging, and will probably grow for some years to come.

By the end of 1897 successful radiographs of renal calculi had been made. The pioneer work of Dr. Charles Lester Leonard, of Philadelphia, in

this then new application deserves the highest praise. At that time the duration of the exposure for a radiograph of the kidney region was ten or fifteen minutes or more, and little detail was shown in the plates. If the shadow of a stone was obtained its presence was proven, but if no such shadow appeared, the negative diagnosis was not indicated. Now, with improved appliance and technic we make these exposures during suspended respiration in from one to ten seconds. We usually obtain shadows of the kidneys which give us accurate information as to their size, shape and position. Practically all calculi large enough to cause symptoms can be shown except those of pure urates or uric acid, and these are fortunately very rare.

The success of the Roentgen diagnosis of urinary calculi led many to attempt to show gall-stones in the same way. Most gall-stones, however, offer scarcely any more obstruction to the rays than the soft tissues which surround them, and it is obvious that such stones cannot be demonstrated in the radiograph. If the stones are not shown it is no indication that cholesterin stones may not be present.

Gall-stones containing enough calcium salts to give perceptible shadows occur occasionally, and have been successfully shown in radiographs. I have seen one case in which a set of plates made by Dr. George E. Pfahler, of Philadelphia, clearly demonstrated the presence of such stones, and were of diagnostic value. I have seen many alleged gall-stone radiographs which really showed nothing but fog and a few finger marks, developer spots or other artifacts and which apparently were exploited either through unpraiseworthy motives or through an unpardonable ignorance of the subject of Roentgen ray diagnosis.

In 1899 the x -ray was being used in the diagnosis of aneurisms of the arch of the aorta, tumors of the mediastinum, tuberculosis, consolidations of the lungs and other lesions of the organs in the thorax. Prominent among these early workers was Dr. F. H. Williams, of Boston, who, very early in the history of the x -ray, established an elaborate equipment at the Boston City Hospital, where he examined hundreds of thoraces with the fluorescent screen and the photographic plate. The screen has proven useful in showing the movements of the diaphragm and the pulsations of the heart. The difference in the excursions of the diaphragm on the two sides due to impairment of function of one lung can be

demonstrated clearly on the fluorescent screen, and has become known as "Williams' sign."

In order to obtain all possible detail in the radiograph it is necessary that the exposure be made while the lungs are at rest. Von Ziemsen and Rieder in Munich, using the technic proposed by Rosenthal, were able as early as 1900 to make beautiful radiographs of the thorax with exposures of one second and less. Most of their rapid work was done with special films and intensifying screens which reduced the sharpness of the resulting shadows, and which were unusual and inconvenient to handle. Dr. Henry Hulst, of Grand Rapids, Michigan, repeated the work of Von Ziemsen and Rieder and very soon improved upon it by discarding entirely the intensifying screen and special films.

The radiography of such soft tissues as are found in the lungs presents a different problem from the study of hard tissues such as bones. In a book on the subject published by Saunders & Co., in 1901, the writer pointed out that, contrary to the ordinarily accepted view, soft tissues could be shown best with rays of highest penetration and hard tissues with rays of low penetration. This statement was amply confirmed by Dr. Hulst, and he has recently made his name preëminent in the Roentgen ray examination of the lungs by applying this principle with the aid of an exceedingly large and powerful influence machine built especially for the purpose.

There is some difference of opinion as to how much reliance can be placed in radiographs of the lungs. The thing most desired is to demonstrate whether or not tuberculosis is present before it can be detected by physical signs or laboratory methods. The accomplishment of this is made difficult by the fact that radiographs of nearly all adults show traces of tuberculous foci which have become encapsulated and calcified. By repeated examinations with the fluoroscope and the photographic plate a fairly accurate idea may be obtained as to whether the disease is active or not. The first examination will very often show areas of consolidation or even cavities which have not been demonstrated by careful physical examination. Much valuable information can be obtained in this way, but the claims of some of the enthusiastic workers in this field are a little extravagant. In all plates such as we obtain of the thoracic region, there are innumerable shadows which may easily be interpreted to fit a preconceived diagnosis.

Much useful information concerning the gastro-intestinal tract may be obtained by x -ray examination after feeding a meal containing a bismuth salt, which is opaque to the x -ray. The size, shape, and position of the stomach can be readily shown. Its motility may be estimated by the length of time it takes for the bismuth meal to pass into the intestines. Strictures or other obstructions in the tract may often be demonstrated. In some cases a malignant tumor pressing against the stomach wall changes its outline in such a way as to excite suspicion. Much excellent work has been done in this field by Dr. Hulst, of Grand Rapids; Crane, of Kalamazoo, and Pancoast and Pfahler, of Philadelphia.

One of the more recent and one of the most difficult applications of the x -ray is in the examination of the accessory nasal sinuses. The frontal sinuses are subject to exceedingly great variation in size and shape in different individuals. Asymmetrical sinuses occur frequently and render diagnosis by ordinary transillumination uncertain. A good set of radiographs will enable us not only to demonstrate the size and shape of the frontal sinuses, but usually to ascertain whether pus is contained in them or in the ethmoid cells or in the maxillary sinuses.

In the study of fractures, dislocations and bone diseases, faulty development of the teeth and diseases of the alveolar processes, the Roentgen ray is so well known that only passing mention need be made of it. The success of radiography in such work as this has long been recognized. The results obtained in this, which is the comparatively easy work of roentgenology, have been materially improved by the use of elaborate accessory appliances, by stereoscopic methods, by shortening the exposures, and by a better knowledge of how to interpret the shadows of certain pathological conditions of the bones.

The use of stereoscopic methods in radiography which was suggested by Elihu Thompson in 1896, and soon afterward put into practice by Mackenzie Davidson, has proven of great value in such work. Unfortunately the technic of stereoscopic radiography is a little tedious and few roentgenologists have availed themselves of its advantages. In examinations for urinary calculi when phleboliths or other extra-urinary bodies produce confusing shadows the stereoscope is valuable in determining their space relations; especially when the ureter is outlined by a styletted ureteral catheter.

Although brilliant radiographs of wrists, hands, elbows and teeth may be made by almost any ama-

teur, the successful use of the x -ray for diagnosis in the thicker parts of the body and especially in the urinary tract, the gastro-intestinal tract, the thorax and the nasal sinuses has been attained by comparatively few men who have spared neither pains nor expense in perfecting their technic. The very great difference in the cost of making an x -ray examination of a simple subject like a wrist or hand and of a difficult one like the gastro-intestinal tract is seldom appreciated. One of my colleagues tells me that his outlay for tubes and plates in such an examination as the one last mentioned averages at least \$30 for each case. The roentgenologist of to-day practices one of the most difficult, dangerous and unremunerative of medical specialties, but the stigma of the bell hanger's x -ray picture shop still clings to him.

Strangely enough, although there are few if any legal restrictions, the practice of the art by those without medical training has almost died out except in some of the hospitals in our largest and least progressive American cities.

The almost ineradicable impression that the radiograph is a picture or a photograph which anyone may properly examine, interpret and criticize, has been a great hindrance to the progress of roentgenology and to its proper recognition.

The radiograph is, in fact, not a picture or even a photograph, except in the sense that photographic materials are used in its production. It is a special kind of projection and is essentially more like a microscopic slide than a photographic view. Unfortunately, it may so much resemble a photograph that laymen and medical men alike are apt to regard it as a *view* and not suspect how incomplete and even how dangerous their over-confident interpretation of it may be.

The mere operation of an x -ray outfit is becoming much easier with improved appliances, but the number and the cost of the necessary appliances have increased enormously. An up-to-date equipment of the best kind for all of the different special applications of Roentgen ray diagnosis will cost from three to seven thousand dollars, and the necessity for adding new apparatus from time to time to replace that which has become obsolete, materially increases the cost to the man who is endeavoring to excel in this very necessary adjunct to medicine and surgery. The roentgenologist who would excel, must provide himself with the best possible equipment. He must acquire skill in the technic of using it. He must be painstaking in his observation of the plates, accurate and not over-enthusiastic

in his interpretation of them. His opinion should be valued rather than his so-called *x-ray* pictures.

Men whose opinions command respect should be placed in charge of the Roentgen ray work in hospitals, and they should be provided with adequate equipment and competent assistants. The extreme degree of economy practiced in the *x-ray* departments of many hospitals occasionally proves dangerous in the end.

The dangers of the *x-ray*, like those of the old muzzle-loading gun, which had neither lock, stock nor barrel, may come from unexpected quarters. Occasionally, a physician may be confronted with the dilemma of fearing to use the *x-ray* lest he burn his patient, and fearing not to use it lest he be liable to suit for malpractice. In reality, although skin lesions are sometimes produced by therapeutic applications of the *x-ray*, their occurrence in diagnostic work has practically disappeared in every laboratory where up-to-date methods are in vogue. There is really more danger in the failure to employ the *x-ray* in appropriate cases than in its application in diagnosis. This is well illustrated by the case which has been freely exploited recently in the newspapers of a patient who had suffered for eleven years from a pair of forceps left in the abdominal cavity in an old surgical operation, and which were readily shown by the *x-ray* years afterward, when the patient was practically moribund.

It is obvious, therefore, that the safest plan is to employ the *x-ray* in appropriate cases, but to be sure that it is skilfully applied. The foregoing remarks are not intended as a eulogy upon the roentgenologist; he has had his troubles, to be sure, but like all mankind he has his shortcomings and has made his mistakes. The mistakes, however, have been an aid in climbing the ladder of experience, and in the promise of the future it is felt that he will, with the coöperation of his colleagues in medicine and surgery, make his work constantly more and more valuable to the healing art and to humanity.

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IMPORTANCE OF OCCULT BLOOD IN THE FECES.

The dark, tar-like stool is symptomatic of duodenal ulcer, but the difficulties in eliminating sources of error in occult blood in the stool are so numerous that less dependence is to be placed upon hemorrhage as a symptom than in stomach ulcer. Differential diagnosis must include a consideration of the possibility of the existence of both duodenal and gastric ulcer in the same patient.—W. D. HAINES in *The Lancet-Clinic*.

FIBROIDS AND PREGNANCY.*

CHARLES LYRBRAND BONIFIELD, M.D.,

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Fibroid tumors of the uterus, are said to be the penalty a woman pays for celibacy. All observers agree that they are much more frequently seen in women who have never borne children, than in those who have, and we can safely say that sterility predisposes to fibroids and fibroids predispose to sterility. Fibroid tumors have a tendency to render a woman sterile in three ways. First, the hypertrophic endometritis they produce, renders the endometrium unfit to receive and nourish the ovum. The nearer the fibroid is to the endometrium, the more marked its effect on this membrane. Secondly, they are frequently complicated by, and apparently cause, diseases of the appendages, that prevent conception. Third, they may so displace the cervix that it is not bathed in the seminal fluid during the sexual act.

But as a fibroid may exist without producing any of these conditions and as pregnancy may occur in spite of the presence of one or more of them, the coexistence of fibroid tumors and pregnancy is by no means extremely rare. It is probably more frequent now than formerly, for women are marrying later in life, thus putting off their child-bearing until they have reached the age when fibroids are prone to develop.

Pregnancy, by the physiological hyperemia of the uterus to which it gives rise, usually causes fibroids to grow rapidly. During the process of involution, following the normal termination of pregnancy, fibroids may decrease in size very perceptibly. Cases have been reported where they have entirely disappeared. I can not recall a case coming under my observation, where the shrinkage after pregnancy has been commensurate with the growth during pregnancy. Decrease in the size of fibroids after pregnancy is neither sufficiently constant nor sufficiently marked to justify one in recommending pregnancy as a therapeutic measure to a woman who has a fibroid. Fibroid tumors may have little or no effect on pregnancy, or labor may give rise to the most serious complications. Submucous fibroids may cause the premature expulsion of the ovum. This is especially apt to occur if the ovum is implanted immediately over the fibroid, for in such a case the seed has not fallen on good ground.

* Read before the Southern Surgical and Gynecological Association, December, 1908.

The danger of infection after abortion is great in these cases. The low vitality of the fibroid renders it unable to resist invading germs and the uterine contractions may so interfere with its blood supply as to cause it to slough. The following case was of this character.

The patient was the wife of a physician. She had miscarried at about the fourth month. A large sub-mucous fibroid became infected. When I saw her, her temperature was 105° and her pulse 140. I did not think she would survive a hysterectomy. The tumor was therefore removed by morcellement, but the patient succumbed in a few minutes after being removed to bed.

Pregnancy may go to term and labor may be normal, but followed by severe hemorrhage, the fibroid acting as a foreign body in the uterus and preventing normal contraction and retraction of the muscular fibers.

The efforts of the uterus to expel the fibroid may be successful, as in the following case.

The patient was seen in the summer of 1886 with Dr. G. of Norwood. I was asked to see her 48 hours after delivery, because the doctor believed he had an inversion of the uterus to deal with. I agreed with his diagnosis and made an effort at reposition which, being unsuccessful, an anesthetic was administered. I then recognized that the "inversion" was a fibroid polypus, which had been expelled from the uterus and vagina. The pedicle was about the size of an index finger and was attached a short distance above the internal os. I rotated the tumor to twist the pedicle and then severed it with a pair of scissors. There was no hemorrhage and the patient made a prompt recovery.

There is danger in such a case if the fibroid be attached near the fundus, that inversion may follow the expulsion.

If a fibroid of the uterus has developed between the folds of the broad ligament, it may prevent the uterus rising into the abdomen as pregnancy advances, and give rise to symptoms so severe as to demand immediate surgical relief. A case of this kind is the following.

Mrs. R. was brought to my office by her family physician, Dr. Loomis, of Independence, Ky., who told me that he believed she was pregnant and that she had a large tumor. On examination I found a tumor filling the pelvis and extending above the umbilicus. The patient's left leg was swollen to twice the size of the right. I was unable to reach the cervix and could form no opinion as to the probability of pregnancy. Dr. Loomis and the patient both said the tumor had almost doubled itself in size in four weeks. I performed a supravaginal hysterectomy. She was three and a half or four months pregnant. The tumor had developed in the left broad ligament and far down behind the uterus and vagina. In lifting it out of the pelvis a large hole was torn in the rectum. This was repaired

with chromicized catgut. The iliac vessels were uncovered for a considerable distance, but fortunately were not torn. The abdomen was closed without drainage. The recovery was uneventful.

A fibroid tumor springing from the lower part of the uterus, may so fill the pelvis, as to prevent the passage of the child either prematurely or at term. I have had two such cases.

Mrs. J. entered Christ's Hospital on May 13, 1900, on the obstetrical service under the care of Dr. L. S. Colter. She was five months pregnant and was having severe labor pains, but the head was unable to engage, and Dr. Colter seeing that delivery could not be effected asked me to see the case. We decided at once on surgical intervention and I performed abdominal hysterectomy. The patient left the hospital well, June 14th.

On the night of October 25, 1902, I was summoned to see Mrs. T. D. in consultation with Drs. Richards and Schoolfield. I reached the bedside about 2 A. M. and found that the patient had been in labor eight hours. She was 32 years old, the mother of two children, the youngest of which was 14 months of age. She had been delivered of this child in New York and while the labor was tedious, lasting 26 hours on account of an early rupture of the membranes, the use of instruments was not necessary and the physician in attendance made no mention of anything abnormal to the patient or her family. When Dr. Richards was called at the beginning of labor, he found a large fibroid filling the hollow of the sacrum and obstructing the pelvic inlet to such an extent that he believed delivery per *vias naturales* to be impossible. He called in consultation Dr. C. B. Schoolfield, who verified the diagnosis and expressed the same opinion as to the possibility of delivery. I was asked to see the case for the purpose of doing a Cesarian section, if my opinion coincided with theirs. We placed the patient under an anesthetic to make a more careful examination and ascertain whether it were possible to lift the tumor out of the pelvis. We found this could not be done and advised immediate removal to the hospital for operation. The operation was performed at 7 A. M., about twelve hours after the onset of labor. The labor pains had been strong and the os was well dilated, but the head had not even begun to engage in the pelvis. A Cesarian section was done in the usual way and a well developed female child was delivered which still lives. The tumor was attached very low down on the posterior wall of the uterus. Its removal would apparently demand a panhysterectomy and I thought this would add much to the gravity of the operation. I therefore deemed it wise to wait to see what effect involution might have on the tumor, hoping a myomectomy might then be possible. The patient reentered the hospital and a panhysterectomy was done June 7, 1903. The fibroid had grown rapidly and had so filled the pelvis that she was unable to empty her bladder. After the abdomen was opened it was lifted out of the pelvis with difficulty. Gauze drainage through the vaginal fornix to control oozing. Prompt recovery.

Subperitoneal or interstitial fibroids that are interfering with pregnancy or promise to interfere seriously with delivery may be removed by myomectomy. Numerous cases have been reported where the operation was successfully done without the interruption of pregnancy. Only one such case has come under my observation.

I assisted Dr. E. W. Mitchell in this operation June 12, 1889. The patient was a primiparous mulatto, in the fourth month of gestation. A fibroid tumor attached low down on the posterior wall of the uterus almost filled the pelvis and caused a great deal of discomfort. All efforts to push the tumor out of the pelvis were futile. The abdomen was therefore opened. The tumor was found attached by a comparatively small pedicle. This was ligated and the tumor removed without difficulty. Recovery was uneventful. Dr. Mitchell induced labor at seven and a half months for pelvic deformity and the child was still-born. The patient has not again conceived.

Myomectomy should usually be limited to those cases in which the tumors are not numerous and are easily accessible. In spite of the reported successes of myomectomy, one can not expect the uterus to withstand too much traumatism without rebelling. The part of the uterus from which the tumor springs is important. The fundus or the upper part of the body and near the median line are the most favorable locations. Near the tubes or cervix the hemorrhage is more troublesome, necessitating more manipulation. In fleshy women with thick abdominal wall, it is especially difficult to enucleate fibroids down near the cervix with the dexterity that is necessary to success. Long deep incisions into the uterine walls must weaken them and render rupture at the time of labor possible if not probable. Most if not all the reported cases of myomectomy during pregnancy have been done within the first five months. Certainly the cases in which it would be justifiable are rare. After the uterus has risen well out of the pelvis, the tumor is not apt to produce unbearable symptoms and it is often surprising how Nature is able to place it during the later months of pregnancy, so that it will not interfere with labor. Bearing this fact in mind and knowing if Nature fails to accomplish this feat, he can come to her help and with a Cesarian section or Porro operation save the child as well as the mother, the surgeon can well afford to await developments.

Fibroid tumors may be the cause of extrauterine pregnancy. Dr. Gillette of Toledo exhibited at the last meeting of the American Association of Obstetricians and Gynecologists, a beautiful specimen of extrauterine pregnancy removed about two months

after missed labor in which a small fibroid occluded the uterine end of the tube and was the evident cause of the condition. Noble reports six cases of ectopic pregnancy complicating fibroids.

In some cases it is evident from the beginning of pregnancy that it will be impossible for it to proceed until the child is viable. Under these circumstances the life of the child must be disregarded. Such a case was the following:

Miss L. was referred to me May, 1908, on account of a very large multinodular fibroid which filled the pelvis and extended above the umbilicus. I advised immediate operation, but did not see her again until September when she reported for operation but told me she had missed two menstrual periods and admitted there was a possibility of pregnancy. The cervix was pushed up so high behind the pelvic arch that it could not be palpated and I could form no satisfactory opinion as to the existence of pregnancy. I performed a supravaginal hysterectomy at the Good Samaritan Hospital September 8th. After the operation the uterus was opened and a three months pregnancy was found.

The number of cases which should be properly treated in this way is small. I believe surgeons inexperienced in abdominal surgery and obstetrics are either prone to overlook pregnancy as a complication of fibroid or overestimate the importance of fibroids near the fundus as a complication of pregnancy, for in recent years I have seen more than one specimen of pregnant uterus which has been removed on account of the pressure of a fibroid, where the proper treatment would have been delivery at term and a myomectomy some months later. In the following case I first attempted myomectomy but on account of technical difficulties abandoned it for hysterectomy.

I saw Mrs. S. in consultation with Dr. Carlton of Latonia. She was just recovering from an attack of gall stone colic of which she had been an occasional victim for several years. She was 35 years old and the mother of three children. I advised her to enter the Good Samaritan Hospital for surgical treatment. The day before her operation she asked me to make a pelvic examination as she recently had had a great deal of discomfort in that region. I readily discovered two fibroid nodules near the cervix, but on account of her being one of the fleshiest women I have ever treated I was unable to diagnose a three months pregnancy that existed. The patient extracted a promise that I would do all the surgery that I found indicated when the abdomen was opened. After removing a large number of gall stones and establishing drainage for the gall-bladder, I closed the wound and made another incision to deal with the pelvic condition. I at once recognized a large pregnant uterus with a number of fibroids near the cervix, one of which was between the folds of the broad ligament. The location of the tumor

and the great thickness of the abdominal wall rendered their enucleation exceedingly difficult and I soon saw that it would unduly prolong the operation to persist in my efforts, and I did a supravaginal hysterectomy instead. The convalescence of the patient was prolonged by some infection in the fat of the lower incision, but she made a good recovery. I should have displayed better judgment had I left the uterus undisturbed until the end of pregnancy and delivered by Cæsarian section.

These cases reported are all that have come under my care in which fibroid tumors have made surgery necessary during pregnancy. The cases I have seen in which surgery was not required are more numerous.

APPENDICOSTOMY.

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We are indebted to Robert Weir of New York, for having pointed out a new and accessible route, by means of which we are able to irrigate the whole of the large, and part of the small intestine, and thus control a tract of mucous membrane that is subject to infection, ulceration and new growths, without subjecting the patient to the risk and inconvenience that attends a cecostomy or colostomy.

Especially is this so on the right side, where leakage of chyme is almost certain to result in loss of flesh and strength to the patient. The observations of Sir William MacEwen prove that "when the opening has been made toward the distal end of the small intestine of sufficient magnitude to allow chyme and intestinal secretions to escape freely the patient suffers from inanition. In marked contrast to this is the condition of the patient affected with an opening in the descending colon near the sigmoid flexure. He does not lose weight; on the contrary, health and strength are maintained and he is capable of carrying out his usual vocation with vigor. These facts go to prove that the entire nutriment obtainable from food is not removed during the passage through the small intestines, otherwise there would be no perceptible loss when the chyme is removed at the end of it; where as it is only when the chyme is allowed to pass along the whole length of the large intestine as far as the sigmoid flexure that the patient derives the full good of the digested matter."

It is now six years since Weir's article on appendicostomy first appeared. In the meantime, observation and a wider experience have enabled us to perfect the technic and arrive at a definite conclusion as

to the value of the operation as a surgical procedure in the following conditions:

- (1). As a means of artificial feeding.
- (2). In cases of ulceration of the large intestine.
- (3). In amebic dysentery, with the object of reaching the source of the trouble by means of irrigation.
- (4). To prevent distention of the large intestine, following operation.
- (5). As a means of introduction of nourishment.
- (6). To drain the intestine, in case of obstruction of the large intestine.
- (7). To relieve mucous colitis, due to reflex appendiceal conditions.
- (8). As a substitute for cecal colostomy.
- (9). As a means of irrigating the small intestine.

Preparation of the Patient.—The patient is advised to enter the hospital three days previous to the day set for operation, in order that suitable preparations may be made. This we believe to be wise, as Combe of Switzerland, points out that when calomel is given the toxins that are stored up are set free in the intestines, and, as a result of absorption, there is an increase in the sulpho-ethers in the urine; consequently, a rise of temperature. He advises that the kidneys be given a chance to get rid of the toxins before operation is attempted. The first night the patient is given calomel and soda in broken doses, $\frac{1}{4}$ grain every fifteen minutes until six doses have been taken, followed the next morning by saline, preferably magnesium sulphate. This is followed by saline enemas, in order that the lower bowel may be thoroughly emptied and to relieve the patient of any straining following the cathartic. For the next thirty-six hours a diet consisting of yolk of egg, boiled rice and milk, soups, toast, a cup of tea or coffee is advised. The morning of the operation the patient is given only a cup of black coffee or tea. By following this regimen we hope to avoid fermentation and save the patient a good deal of suffering later on.

Preparation of the Field of Operation.—Twenty-four hours before operation a soap poultice is applied to the abdomen; this is allowed to remain in place for twelve hours, when it is removed and the abdomen washed off by means of a piece of gauze saturated with ether; this is followed by sterile water and alcohol applied in the same manner. An ointment of oleate of mercury is now substituted and allowed to remain in place until the patient is under the anesthetic, when it is removed and the skin scrubbed with tincture of green soap, using a piece of gauze to do the scrubbing; the surface is then sponged with ether, and finally with alcohol.

We believe that shock would be lessened, and the anguish and dread caused by the idea of an anesthetic would be minimized, if previous to all operations the patient were given an injection of $\frac{1}{100}$ of a grain of hyoscine and $\frac{1}{4}$ of a grain of morphine, three hours before the time set for the operation. If advisable, and only under the supervision of the operator or his trained assistant, a second injection, consisting of hyoscine and morphine in a dosage consistent with the patient's tolerance may be administered. We have followed this procedure in a number of cases and have found it entirely satisfactory. The patient has no recollection of being taken to the operating room; the quantity of the anesthetic required to complete the operations is very small, and, as a consequence, the disagreeable after-effects are eliminated.

The Modern Operation.—The patient having been prepared as previously suggested, the location of the appendix is ascertained, if possible. In some the appendix is found directed down over the brim of the pelvis and can sometimes be felt through the rectum. In such cases the incision should be made low down in the abdomen; otherwise, the McBurney or Kammerer incision is employed. The length of the incision should not exceed an inch and a half.

When the abdomen is opened the cecum can easily be found, and, by following the anterior band, the appendix is reached and brought forth and the appendiceal artery ligated close to the first branch that is given off to the appendix. It is important to observe these precautions, as this branch anastomosis with the appendiceal branch of the cecal artery and furnishes a good blood supply to the root of the appendix. The meso-appendix is now stripped off, and any bleeding points presenting themselves ligated. The cecum, about one-tenth of an inch from the appendix, is next sutured to the peritoneum. This precaution is observed so that if, by any chance, the appendix is perforated in an effort to introduce the catheter afterward, the perforation will be extra-peritoneal. The fascia is now closed by means of interrupted sutures, care being taken not to suture it too snugly around the appendix; otherwise strangulation might occur at this point and complications follow. The appendix should then be held by an assistant and sutured to the skin by means of two lateral sutures to prevent it receding into the abdomen. The skin is approximated on either side of the appendix by means of two continuous No. 2 plain catgut sutures, and finally the wound is sealed by means of cotton and collodion. Care must be taken that the collodion does not flow around the ap-

pendix and strangulate it. Afterward the appendix is wrapped in a piece of rubber tissue and a gauze dressing placed over all, held in place by means of adhesive plasters, thus completing the operation.

On the third day subsequent to the operation, the appendix is opened by removing that portion above the level of the skin. No anesthetic is required for this procedure, which is not painful. Contrast this with a case in which the mesentery was allowed to remain intact. Immediately the appendix was handled the patient complained of pain radiating up to his umbilicus and then into the epigastrium, increasing in intensity; and, as the mesentery was cut and handled the patient became pale, nauseated, a cold perspiration covered his face, and he was returned to bed, suffering from severe shock.

Normal Salt Solution Through the Catheter.—The solutions to be used for subsequent irrigation depend on the condition for which the appendicostomy is performed. If it is to be used as a means of artificial feeding, the patient suffering from some gastric trouble, then a suitable nourishment is administered. It is, however, well to know that a fair percentage of fats are absorbed in the cecum, as pointed out by Sir William MacEwen. This statement may be questioned on account of the absence of villi in the large intestine; but if we remember that Lieberkuhn's follicles are really inverted villi, we can more readily see how this is possible. Moreover, we believe it is probable that under certain conditions those inverted villi which ordinarily absorb a certain percentage of the fats may, by some wise provision of nature, be capable of increasing their capacity. In one case of Tuttle's, where an artificial anus had to be made on the right side near the ileum, for multiple adenomata in a child, by all preconceived and accepted ideas the child should lose weight, and I believe would have, were it not for the fact that he was systematically fed on emulsified fats. Now, one year later, the child has gained about ten pounds and is, so far as we can see, cured of his adenomatous condition. For this reason we are inclined to agree with the surgeons who advocate this operation as a means of artificial feeding. Keetley has employed it to relieve obstinate constipation; to fix the cecum in cases of intussusception of the ileum, and as a substitute for colostomy. We have had no experience with the operation for the conditions named by Keetley.

We do speak, authoritatively, however, of its value in amebic dysentery, as the majority of cases where we have employed this procedure were for the

relief of this condition. As each and every papular ulcer that we see in the intestine contains one or more amebæ, which, when the mucous membrane ulcerates, sets free several young amebæ, these, being free in the intestine, penetrate at some other point in the gut forming one or more colonies, thus multiplying and forming fresh foci. For this reason, washing out the intestines and removing the young colonies faster than they are produced will bring about an improvement which, if persisted in, will eventually cure. In other words, we believe the cure of the patient by irrigation to be purely a mechanical process. Other men have had equally good results with solutions of quinine, copper, krameria, etc.; but if what we state is correct, then a normal salt solution is sufficient. The disadvantage of using medicated solutions like quinine, copper and so on, is that they frequently cause very disagreeable toxic symptoms.

The question may be asked—Why should not high colonic irrigations produce the same results? Because, first, the current is *vis a tergo*; secondly, very few patients readily tolerate taking high rectal injections and will not continue the treatment for any time, for, owing to the sensitiveness of the intestine, spasmodic contraction takes place, causing acute pain. Again, rectal irrigations, simple as they are, require a degree of skill not possessed by all patients. Assuming, however, that patients are willing to put up with the discomfort, and granting that they will carry out the treatment, it is doubtful if in many cases the cecum is reached. In comparatively few cases have amebic ulcers been found higher than the cecum; if the ileum is suspected, it can be reached through the appendiceal opening and washed out, but not by high colonic injections.

Technic of Irrigation.—For the first few days after the appendix has been opened, the bowel is irrigated with a pint of normal saline solution, once a day at temperature of 70°. Gradually the quantity introduced is increased until a quart is reached; this is the capacity of the majority of individuals. If the case is a severe one, a smaller quantity should be used for fear of over-distention, and the possible perforation of an ulceration. It is better in such cases to use a pint at a time, and irrigate twice a day. If copper is preferred, a solution of $\frac{1}{5000}$ is generally used, the patient being carefully watched for toxic symptoms.

Experimental work by Musgrave, in Manila, has demonstrated that the temperature of the solution does not affect the vitality of the ameba; and that the idiosyncrasies of the patient with regard to temperature should be consulted, and his comfort thus

increased. Nevertheless, by causing the amebæ to become encapsulated we believe they are more easily removed, and for this reason, if the patient can stand it, we prefer a cold solution. If an astringent is necessary, then a solution of krameria in the proportion of a tablespoonful to a pint of water answers the purpose.

The post-operative treatment, which is curative, should be most carefully carried out according to the lines above suggested. It should be persisted in for a number of months after the disappearance of the symptoms, because it has been found that amebæ may be resuscitated, by giving a dose of magnesium sulphate as a test after the patient is apparently cured.

In catarrhal conditions a 2 per cent. solution of ichthyol may be given with good results. If it is necessary to use some other solution, the following will be found serviceable: Nitrate of silver, $\frac{1}{5000}$; solution of hydrogen peroxide, 15 to 20%; aqueous fluid extract of krameria, 10%.

In case of multiple adenomata, we have found radium water most efficient. If this cannot be obtained, krameria, or some other astringent should be used.

Washing out of the small intestine was first suggested by Keetley and carried into effect by Sir William Bennett and William Ewart (*Lancet*, May 12, 1906, page 1311). Drs. Ewart and Bennett first worked out the technic on the cadaver, and afterward successfully put it into effect on a case of Ewart's. Quoting from the report: "Skiagrams were taken later, which showed one catheter lying in the ascending colon, and the other in the small intestine passing across from the right side of the small pelvis, across the middle line, till the point was lost about the brim of the true pelvis on the left-hand side." The *modus operandi*, as described by Ewart, is as follows: The catheter is bent (not too sharply) to about 110° at a point two and one-half inches from its tip. It is to be introduced not sagittally, as when it is intended for use in the cecum, but inward and downward as well as backward, in the direction of the nearest spot on the brim of the pelvis. The assurance that the catheter has entered the small intestine is given by the greater length introduced (maximum, in case of Ewart, nine inches), by the subjective sensations of the patient experienced in the hypogastrium even so far as the middle line, by the direct palpation through the abdominal wall sometimes obtained by the operator and by the skiagram of the stillette *in situ*."

Shortly after reading Ewart's paper, the writer had several cases of amebic dysentery, on which he

performed appendicostomy, with the object of irrigating the large bowel. Six of the eight cases thus operated upon promptly yielded to this treatment. Two, however, remained intractable, and on these it was decided to try Ewart's method, especially as the writer remembered that the entameba dysenteria sometimes invades the small intestines. The technic of Ewart was not wholly followed, but this is of no importance, except that if difficulty is experienced in passing the catheter as advised by Ewart, the plan used by me might be helpful. The appendix was gradually dilated and a good sized urethroscope passed, electrically lighted, into the cecum, and through this instrument was passed a catheter into the small intestine. Then the urethroscope was withdrawn allowing the catheter to remain *in situ*, the intestines were irrigated with a solution of normal salt.

Closure of the Appendix; When and How.—In amebic dysentery, we are in the habit of allowing the opening to remain for at least a year and a half; by so doing there has not been a single recurrence in the twenty-seven cases reported by James P. Tuttle and the writer. In mucous colitis, with or without ulceration, multiple adenomata, and all other conditions for which this operation has been suggested, the opening is closed three months after the subsidence of all symptoms; or the cure of the condition, if done to relieve some mechanical obstruction; if used as a means of artificial feeding, it is closed after it has outlived its usefulness.

Complications.—Herniæ occurred in two cases, but as they were small, they caused very little inconvenience. When the time came to close the opening, it was decided to exsect the appendix and repair the hernia at the same time. The technic decided on in these cases was as follows: The opening of the appendix was first cauterized with a Paquelin cautery; an incision was made around the appendix and the organ isolated so as to permit its being clamped and its stump burned off. The operation was then proceeded with in the usual manner, the appendix being clamped close to the cecum, cauterized and inverted, and finally buried with Lembert sutures. Primary union and cure of the hernia resulted in both these cases.

Pain over the left hypochondrial and splenic regions is a common complication following amebic dysentery. It persists for a long time and does not disappear until long after all symptoms of dysentery have subsided. This we believe to be due either to the fact that ulcerations in this region are slow to heal, owing to a mixed infection, or to the accumulation of gas and fecal matter. Pain around the

opening of the appendix occurs from time to time, due to little papules of granulation tissue; but this can easily be relieved by removing the cause, using either the curette or nitrate of silver.

Difficulty in Reintroducing the Catheter.—Difficulty is sometimes experienced in reintroducing the catheter, owing to a spasmodic closure of the sphincter, which guards the opening between the cecum and the appendix. This can be best overcome by gentleness, patience, and possibly the injection of a small quantity of warm olive oil previous to passing the catheter. It is both unnecessary and dangerous to use any force, for the appendix might then be perforated and an abscess, or possibly peritonitis result. If an abscess should follow faulty catheterization it should be promptly opened.

Difficulty in Closing the Opening.—After the appendix has remained open for a year or more, there is sometimes trouble in closing the opening, especially if a large catheter has been used and kept in place for any length of time. This is due to the gradual destruction of the mucous membrane and its replacement by connective tissue, a fecal fistula resulting. Curetting the fistula with an ordinary ear curette and injecting either ichthyol or iodoform, mixed with simple cerate, should bring about healthy granulation and gradual closing of the opening. Should this fail the opening can be closed by removing the appendix as previously advised.

Prolapse of the mucous membrane of the appendix occurs in a small percentage of cases. This can easily be remedied by inserting a plug to keep it in place, or by cauterizing the mucous membrane with the actual cautery or with nitrate of silver. Care must be taken, afterward, that stricture does not follow this procedure.

Prolapse of the cecum through the appendicostomy fistula is a rare complication. One case has been reported by Willy Meyer (*Annals of Surgery*, May, 1908, page 808). If prolapse of the cecum occurs only after the opening is no longer essential, the prolapse can be excised and the bowel sutured, as suggested by Willy Meyer; or the appendix may be removed as in the event of hernia.

One of the complications I have noticed following this operation (especially where the appendix has been dilated and the mucous membrane traumatized, or where there is some superficial suppuration around the appendix) is enlargement of the superficial lymphatic gland above Poupart's ligament. However, this usually subsides in a few days, after appropriate dressings have been applied.

Most watchful supervision is necessary when medicated solutions of high toxicity are used, be-

cause, first, a large area of bowel whose principal function is that of absorption, is exposed to the solution; second, because absorption of toxins and drugs occurs more readily from an ulcerated than from a normal mucous surface. Even a solution of salt, if not properly prepared, is apt to work injury to the patient. In this connection we would mention that $\frac{9}{10}$ of 1% is isotonic with human blood and it has been pointed out by physiological chemists that any deviation from the normal causes a destruction of the blood cells. The importance of this cannot be overestimated. In one case, owing to the carelessness of the nurse, a concentrated solution from stock was used and caused pronounced shock. We would, therefore, urge those who have not the facilities for preparing the solution, to keep on hand tablets which, when added to a certain quantity of sterile water, give an absolutely reliable solution.

When diarrhea and the passage of blood continue, after all amebæ have disappeared from the stools, examination of the rectum and sigmoid should be made to see whether polypoid growths, either adenomatous or papillomatous exist. They are generally confined to the rectum and sigmoid and can be readily seen through the proctoscope, and then removed by means of the snare or cautery.

The danger of liver infection, in case the appendix is involved, has been put forth by Musgrave as an objection to this operation. We will admit that the appendix is involved in a good many cases of amebic dysentery; but we believe the danger of liver infection, following operation, is usually more imaginary than real.

Objections to the Operation.—The danger attending the opening of the abdomen is, of course, the main objection; but there is less danger in the procedure than there is of liver infection if the disease is allowed to run riot. Furthermore, this operation (unless contraindicated by some kidney, heart or lung complication) should have no mortality, other than that of the anesthetic, if all the rules of surgical technic are carefully observed.

28 WEST 50TH STREET.

"OPEN ULCER" HEMORRHAGE.

The danger of hemorrhage is ever associated with the presence of an open ulcer. It may be slight capillary oozing or more free bleeding from venous or arterial trunks. Erosion of a vessel in the wall of an old indurated ulcer is apt to be fatal on account of the fact that the vessel walls are held as by a vise, preventing collapse or retraction and clot formation.—JOHN B. DEEVER in the *Therapeutic Gazette*.

Surgical Suggestions

An intractable non-gonorrheal cystitis in the male nearly always indicates a tuberculous kidney.

—H. N.

When a pyloric carcinoma is palpable, preoperatively radical removal is usually impossible—H. N.

The examination of the eye grounds will often be the first clue to a tumor of the brain.—H. N.

When draining a deep-seated abscess found with an aspirator, do not remove the aspirating needle until the abscess has been freely opened. (It is allowable to replace the needle by a grooved director).—H. N.

Osteosarcoma about a joint may closely simulate a rapidly-growing exostosis of arthritis deformans.

—H. N.

X-ray shadows of renal calculi very close to the vertebral column should make one suspect stones in one half of a horseshoe kidney.—H. N.

Not infrequently shifting dulness in the flanks is the only differential signs between diaphragmatic pleurisy (and beginning pneumonia) and appendicitis.—H. N.

Rectal palpation is an essential part of the examination in most acute intraabdominal affections.

Peristalsis from left to right, visible through the upper abdomen, is indicative of pyloric obstruction.—W.

To develop manual dexterity nothing is better than the practice of tying surgical knots.—H. N.

Not only in the abdomen but everywhere else in the body—with the sole exception of the brain—when in doubt, drain!—H. N.

For the diagnosis of fractures of the upper end of the femur careful measurements are often of greater value than any manipulations—and much safer.—H. N.

When a patient with inflamed varicose veins develops suddenly dyspnea and cyanosis, don't sit her up to examine her—the probability of pulmonary embolism is too great.—H. N.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, SEPTEMBER, 1909.

THE CONSERVATIVE TREATMENT OF INTESTINAL OBSTRUCTION.

This editorial is inspired by the fact that the writer has seen not a few lives sacrificed upon the altar of complete and perfect technic in treating intestinal obstruction, when a cure would have been possible had the surgeon been willing to do less. For example, in a case of gangrene of the sigmoid from volvulus, having done his resection the surgeon is prone to proceed with an anastomosis of the bowel. The temptation to do a complete and perfect operation is very great. A successful operation is often done; but the patient dies. Better success is secured if the bowel ends are rapidly brought up into the wound and fastened there. Then with a living patient the surgeon may in his own good time and convenience apply such measures for the cure of the artificial anus as the circumstances indicate.

We begin an emergency operation with a mental consciousness that the operation is of emergency. Without surgical relief the patient will perish. But at a certain stage in the operation the condition ceases to be one of emergency. The lethal conditions have been relieved or overcome. Then it is that the wise surgeon changes his mental attitude in the very midst of the operation. He ceases to think of his patient as possessed of a fatal disease, but as one with a good chance for recovery if it is but given to him.

During operations for resection of the colon for cancer, it is not infrequently observed that the

chronically ill patient begins to show depression. That is the time for the surgeon to dismiss from his mind all ideas of a completed and perfect operation. Let the bowel be fixed in the wound, and let the patient have a chance for his life. An artificial anus is not a pleasant thing to contemplate. It is nasty, and requires much care. Patients who find themselves possessed of one, often say: "I would rather have died than been left in this condition." That is just one of the falsehoods which develop out of the psychology of sickness. This state of mind should not be taken seriously. Let the surgeon be not coerced by it nor intimidated. It is not for the patient to decide anyway. The business of the surgeon is to save life. A patient with an artificial anus can be cured. Moreover, he has the merit of being alive. A patient lying dead, even though his snugly closed abdomen contains a perfect piece of anastomotic work, is not a credit to surgery or the surgeon.

In the treatment of intestinal obstruction there is one major indication: that is to relieve the obstruction. The next step is to empty the bowel of the retained stercoral poison. These things having been done, the emergency has been met, and the surgeon's next duty depends upon the patient's general condition. But to proceed to consummate a classical operation at this stage, when the patient is in the grasp of toxemia and shock, is a reproach to surgery; for surgery is an art as well as a science, and the surgeon should be humanitarian as well as master mechanic.—
J. P. W.

JOURNAL DE CHIRURGIE.

Contemporaneous surgical literature, in many languages, is scattered through hundreds of medical journals and society "transactions." For those who would have knowledge of all these publications an index and abstract, published at short intervals, is quite essential. The various year books and quarterlies, and the reviewing departments of many journals present, to be sure, the most important surgical advances, but they are necessarily quite incomplete and for the bibliographer their service is limited. The well-known German weekly surgical review contains no mention of any article not abstracted; and these abstracts are scattered, unsystematized and rather "stale."

To those of our readers, and especially those who read French, who are in search of a thoroughgoing index to, and review of current surgical literature, we would earnestly commend *Journal de Chirurgie*,* now in its second year of publication. This "revue critique," edited by Cunéo, Gosset, Lecène, Lenormant and Proust of the Faculté de médecine

de Paris, presents each month: a classified list of all the surgical, special and general medical journals of record (received since the preceding issue), that contain any surgical articles, and the titles of those articles (in French and in the original); the surgical programmes of societies (one hundred or more) of all the large cities of Europe and America; a list of recently published surgical dissertations and books; an alphabetical subject-index to all these titles; and abstracts of many of these articles, theses, books and society presentations. The abstracts have these notable features: They are grouped under definite headings (technic, general surgical pathology, general therapeutics, cranium and brain, mouth and pharynx, etc.); they are well written; they are in clear type and freely illustrated; to a single subject each month is devoted a broad review by one of the editors. The index, printed on tinted paper, may be removed from the abstracts for separate binding. Opposite each journal or medical society is a marginal number by which it is constantly indexed.

Than this description of its contents nothing more is needed to indicate the value of *Journal de Chirurgie*. But a word of thanks from this side of the Atlantic is due those who have so comprehensively conducted this work. And here we must recall that in the years during which the publication of the *Index Medicus* was suspended, our French colleagues stepped into the breach with *Bibliographia Medica*.—W. M. B.

LIGATION OF THE VEINS FOR PURULENT PYLEPHLEBITIS FOLLOWING APPENDICITIS.

Although many criticisms may be made of Wilms' case of ligation of the veins in purulent pylephlebitis following appendicitis (reviewed on page 312 of this issue) the principle is one to which we would draw attention. With our present treatment, pylephlebitis following appendicitis, is a uniformly fatal condition. The organisms are rapidly carried to the liver, and the patient usually dies with the clinical picture of multiple abscesses of that organ. It is not fair to assume from Wilms' report of his case that pylephlebitis *was* present because he had not removed the appendix, nor does he describe the condition of the veins tied off. It is well known, too, that gangrenous appendicitis alone may be the cause of oft-repeated chills. On the other hand it is equally well known that early in pylephlebitis only the small venous radicles of the appendix and and in the mesentery immediately above the ileo-cecal junction are infected.

Theoretically, therefore, the operation might

proceed as follows in a case of pylephlebitis: The appendix is delivered in the usual way, but instead of tying off its mesenterium the latter is incised step by step to see whether there is any bleeding from the veins. If there is no bleeding the mesenterium is divided slowly at a higher level, but one that is safe for proper ligation of any vessels that should bleed. If now there is no bleeding from the veins, the anterior surface of the mesentery is exposed above the ileo-cecal junction. It is incised near the ileo-cecum and stripped upwards to expose the mesenteric vessels. The veins are examined and are treated in the same way as those of the mesenterium. The highest level to which one may go without great danger of gangrene of the intestine is about two inches above the upper border of the ileum. If at this level the veins are thrombosed, theoretically such an operation should be abandoned because patients with pylephlebitis are too sick to stand a resection of the ileo-cecal junction in an infected field. Should the operator have the good fortune to find the veins free they should be dissected from the arteries and tied off (at this level, there are from two to four venous trunks into which the venous radicles of the appendix and ileo-cecum empty). The field of operation should be widely drained. Wilms, in this case, mobilized the cecum and ileum, but this would seem to be unnecessary and offer grave possibilities for a retroperitoneal cellulitis.

Any procedure that may improve the chances of a patient who has practically no chance with suppurative pylephlebitis should be most strongly advocated on all sides—thereby a curative procedure may be perfected.—H. N.

BACTERIA IN NORMAL VISCERA.

It has been generally accepted that normal liver, spleen, kidney and blood are free from bacteria. On the other hand, the lungs, mesenteric and other glands of healthy animals may contain bacteria. H. Conradi, of Neunkirchen, (*Muenchener Medizinischer Wochenschrift*, June 29, 1909) has made new tests upon cattle and swine immediately after they were killed, using a special technic which excludes outside contamination. Bacteria were found in nearly two-thirds of all the livers and in one-third of the kidneys and muscle. Of five lungs, four, of four lymph glands, one, and of eleven spleens, one contained microorganisms. Anaerobic bacteria were very common. The types of organism show that the majority belong to the intestinal flora. The number of bacteria were very few. Possibly these experiments, which are to be continued, will throw light upon the relation of trauma and infection.

* Published monthly by Maisson et Cie, Paris.

Book Reviews.

Myomata of the Uterus. By HOWARD A. KELLY, Professor of Gynecology in the Johns Hopkins University, and THOMAS S. CULLEN, Associate Professor of Gynecology, Johns Hopkins University. Royal octavo; 723 pages; 386 illustrations by August Horn and Hermann Becker. Philadelphia and London: W. B. SAUNDERS Co., 1909. Cloth, \$7.50; half morocco, \$9. net.

The material upon which this volume is based consists of all the cases of uterine myoma operated upon by the Johns Hopkins Hospital staff during a period of twenty years, 1,674 in all. The total mortality was between 5-6 per cent.; for the last 238 cases less than 1 per cent. As this enormous material is discussed at great length, no attempt was made to review the literature. The authors have approached the subject from various viewpoints dealing with the anatomical classifications—uterine, parasitic, cervical, submucous myomata; the pathological—degenerations, calcification, angiomyoma, lipomyoma, adenomyoma, myosarcoma, etc.; associated conditions—of the adnexa, ligaments, bladder and ureter, etc.; symptoms, diagnosis, operative methods, etc., etc. At least a chapter is devoted to each heading.

No other book dealing with the subject approaches this one in wealth of detail, in closeness of observation, in marvelously faithful reproduction of conditions by means of superb illustration. Fully 950 actual cases are recorded more or less fully in the text, thus putting a huge "case-book" at the disposal of the reader.

It is impossible, in the compass of a review, to give even a brief abstract of the contents. A few striking statements may be selected, however. Of the causes of myoma sterility seems important, for of 1,149 women 584 were sterile. "The uterus must have something to do and if it is not kept relatively busy as a result of frequent pregnancies, it may tend to show its activity in another direction, namely in the formation of myomata." Disturbance of menstrual function is never occasioned by a myoma unless the contour of the uterine cavity is altered and the mucosa impinged upon. The authors agree with Leopold that heart changes, if found in myomatous patients, are solely due to the uterine hemorrhages. Myomectomy in 94 patients during the child-bearing period was followed in but 12 by pregnancy. Supravaginal hysterectomy is the operation of choice, but only where the specimen which is at once examined shows no signs of malignant changes.

The excellence of this work is striking, as we have attempted to show by this necessarily brief review; but its deficiencies are equally obvious. There has been no fault of omission (!); on the contrary, by embodying more than 900 histories in the text, the reader is overwhelmed and bewildered by an enormous mass of detail, by a great disproportion between epicritical remarks and casuistic data. Does the description of hyaline and cystic degeneration of myomata warrant the recording of 20 cases? By this very recording of everything seen or found or surmised, the authors defeat their purpose. The general practitioner will much prefer a shorter and more concise exposition, a résumé of the large and valuable knowledge and experience of two such authoritative authors as Kelly and Cullen; the specialist will find pages and pages of case histories such as those with which he is acquainted from his own work. Let us hope that the next edition of this otherwise admirable book will show the effect of judicious but liberal pruning.

Gynaecologia Helvetica, contenant les Comptes Rendus officiels des séances de la Société d'Obstétrique et de Gynécologie de la Suisse Romande. Bearbeitet und herausgegeben von PROF. DR. O. BEUTTNER, Direktor der Universitäts-Frauenklinik in Genf. Octavo; 286 pages; 40 illustrations and 9 plates. Vol. IX., Part I. Genf, 1909.

The first 66 pages are occupied by the proceedings of the Obstetrical and Gynecological Society of Switzerland.

The volume also contains eight original articles—*Bauer*, A case of placenta previa centralis, with expulsion of the intact ovum (5½ months); *Debrunner*, Perforation of the uterus by the curette; *Guggisberg*, Fetus papyraceus; *Meyer-Ruegg*, Retention of fetal bones after abortion; *Meyer-Wirs*, Pubiotomy; *Stoll*, Galvanocautic uterine sound; *Perries*, Three cases of accessory mammary glands, and *Rapin*, Michel's clamps. A very careful résumé of important articles from the literature of Switzerland and other countries, fully illustrated, covers more than sixty pages. The articles are mostly in German, a few in French. The volume is handsomely gotten up and contains much valuable material.

Bier's Hyperemic Treatment in Surgery, Medicine, and the Specialties. A Manual of Its Practical Application. By WILLY MEYER, M.D., Professor of Surgery at the New York Post-Graduate Medical School and Hospital; Surgeon to the German Hospital, New York, etc.; and PROFESSOR DR. VICTOR SCHMIEDEN, Assistant to Professor Bier, University of Berlin. Second Edition, revised and enlarged. Octavo; 280 pages; 103 illustrations. Philadelphia and London: W. B. SAUNDERS Co., 1909.

What has been said in review of the first edition in the AMERICAN JOURNAL OF SURGERY several months ago applies to this work in its present form. Very few additions to the text have been made—chiefly the insertion of some histories of the more interesting cases. The largest addition is a very extensive index of the literature of the subject, embracing practically everything that had been written on Bier's treatment.

Marriage and Disease. Being an abridged edition of "Health and Disease in Relation to Marriage and the Married State." Edited by PROFESSOR H. SENATOR and DR. S. KAMINER, Berlin. Translated from the German by J. DULBERG, M.D., Manchester, Eng. Octavo; 452 pages. New York: PAUL B. HOEBER, 1909. Price, \$2.50.

There is no more valuable service that can be rendered to busy practitioners than to condense large works and make the gist of special information available. The above abridgment has been excellently made. Freed from superfluous technicalities, the broad subject of marriage and disease is presented in a most enlightening, frank, honest manner. Among public health problems one cannot overestimate the importance of disseminating information regarding the hygiene of marriage with reference to the effects upon the potential parents and their progeny. The popularization of sexual information is distinctly within the field of the general practitioner rather than the field of the specialist. The general practitioner, the family health counselor, should be consulted by every man previous to betrothal.

The chapter by Mr. Gruber on the Hygienic Significance of Marriage is well presented. With very little emendation it could be gotten out in the form of a tract to be handed to prospective brides and grooms. It is generally moderate in tone, but lays proper emphasis on the compatibility of good health and abstention from sexual intercourse. The dangers of early and late marriages, rapidly successive births and mortality of illegitimacy are carefully discussed. There are a few over-statements, as for example: "No one is perfectly normal and entirely free from inherited disease," and "we are in essentials the creatures of parents and ancestors predestined by some combination as to what we are to be"; nor is it wise to dissuade from marriage women with poorly developed breasts and hips. Why are not primary and tertiary syphilis to be excluded from marriage? The chapter as at present written is unsafe for the laity, as it contains much that would tend to loosen the fibres of society, which is hardly prepared to accept marriage on the basis of social physiology. To keep everyone from marrying because of some slight physical, mental or moral defect would be the best stimulus to prostitution.

The chapter on Congenital and Inherited Diseases lacks harmony and is not fully freed from technicality. Turbinger has written a most valuable chapter on Sexual

Hygiene in Married Life. It is frank, conservative, rational and worthy a place next to the marriage certificate. An occasional error occurs, as "lactation makes a woman for the time being sterile." That belief has made many a home unhappy. Neisser's discussion on gonorrheal diseases is well balanced. Lederman has exaggerated the dangers of leprosy, concerning which physicians should give more scientific advice. To call a urethral carbuncle a sort of elephantiasis is quite too hyperbolic.

The treatment of the subject of insanity is very full, too much so even for a doctor contemplating matrimony. The discussions of perverse sexual sensations, alcoholism and morphinism are succinct and suggestive. It is regrettable that an asterisk occurs after the many statements of a morbid, psychopathic nature calling attention to the fact that an appetite for such themes may be better sated by reference to unabridged, unpurgated work. The question of the economic importance of sanitary conditions in relation to marriage resolves itself into a logical, earnest advocacy of marriage certificates of health for males.

There is little doubt that the work in its condensed form will fill a great need. Education of physicians in the subjects involved in marriage and disease is most necessary; it is not part of the training offered by our medical schools. Welcome to the abridged volume—even without the asterisks.

Atlas und Grundriss der Röntgendiagnostik in der inneren Medizin. Bearbeitet von Beck, Brauer, Groedel, Haenisch, Jamin, Köhler, Krause, Spiess, Steyrer. Herausgegeben von DR. MED. FRANZ M. GROEDEL, Bad Nauheim. Large octavo; 338 text pages; with 114 text illustrations and 297 pictures in 12 photographic and 44 autotype plates. München: J. F. LEHMANN, 1909. Price, 24 Marks.

In the preface Groedel states that the reason for the publication of this book is to be found in the need for a comprehensive treatise on the use of the Roentgen rays in internal medicine adapted to the use of the non-roentgenologist. He and his collaborators have fully succeeded in accomplishing the purpose thus stated.

The work begins with a short chapter on the technics of radiography, in which the various apparatus and methods are briefly but sufficiently described. The only criticism to be made here is the failure of Groedel to mention the American inventor Snook in connection with the "interrupterless" generator or transformer. Whatever may be claimed for Koch and others, the one fact remains that it was the American who first made the apparatus work.

The next main division treats of the examination of the organs of respiration. It is difficult to select from its nine subdivisions any one as of greater merit. Especial reference, however, must be made to the sections on the normal thorax by Groedel, the diaphragm and respiration by Jamin, and on pulmonary tuberculosis by Paul Krause.

Then follows a consideration of the organs of circulation. Here the chapter on the heart, by Groedel, stands out pre-eminently. Both the normal and the pathological heart are exhaustively treated. The text as well as the illustrations demonstrate conclusively what a valuable aid the x-ray is in the diagnosis of the various forms of heart disease. One need not criticise too severely the author, who is a master of orthodiagraphy, for his partiality to this method as against teleroentgenography.

In the part dealing with the alimentary tract the chapters on the esophagus by Steyrer, and the gastro-intestinal canal by Groedel, deserve particular commendation for the accurate presentation of the subject. Only the chapter on the liver and gall-bladder, by Carl Beck, of New York, is a disappointment. The Roentgen diagnosis in this field is still in a rather primitive state and no amount of hopefulness as to results to be obtained in the future changes the present aspect. To fill space, Beck provides anatomical and surgical descriptions and illustrations are a-plenty and the history of a gall-stone family is cited. This would all be very well in a treatise on the diseases of the liver and gall-bladder or in a surgical text-book, but it is entirely out of place in a work of this sort.

Haenisch contributes a chapter on the Roentgen diag-

nosis of the urinary tract which is well written and judiciously illustrated, and Köhler's treatise on the diseases of the skeleton keeps well within the bounds of a medical book a subject that is for the most part surgical.

The appended bibliography is practically exhaustive and of inestimable value to the general practitioner as well as to the roentgenologist.

The reproductions in half-tone and in photographic print are beautiful examples of their respective arts and are highly instructive.

Written in its greatest part by clinicians who have utilized the Roentgen rays in their respective fields of work, the work places a true value on this most modern means of diagnosis. It shares neither the skepticism, born of ignorance, of those who but rarely make use of the x-rays in "medical" diseases, nor the enthusiasm of the one-sided specialist who forgets that this is but another addition to our diagnostic armamentarium and no more. The authors repeatedly emphasize that only by a consideration of the Roentgen ray findings, together with all the other clinical data, can satisfactory results be obtained.

Another merit of this book lies in its insistence on fluoroscopy (so little practiced in this country) in all examinations of dynamic conditions of the thoracic or abdominal organs.

It is to be hoped that this or as good a work will before long appear in the English language.

Books Received

Die erste ärztliche Hilfe bei Unfallverletzten. Beiträge zur Unfallheilkunde von A. KÖHLER, Berlin. Pamphlet; 44 pages. Berlin: AUGUST HIRSCHWALD, 1909. Price, 1 Mark.

Ueber die Lage des Wurmfortsatzes. VON RHABAN LIERTZ, Unterarzt beim 6. Rheinischen Infanterie-Regiment No. 68, kommandiert zur Kgl. Charité. Octavo; 146 pages; 12 figures and 3 plates. Berlin: AUGUST HIRSCHWALD, 1909. Price, 4 Marks.

Sprains and Allied Injuries of Joints. By R. H. ANGLIN WHITELOCKE, M.D., M.C. (Edin.), F.R.C.S. (Eng.), Honorary Surgeon to the Radcliffe Infirmary and County Hospital at Oxford; Lichfield Lecturer in Surgery in the University. Small octavo; 241 pages; 65 illustrations. London: OXFORD UNIVERSITY PRESS, 1909.

Manual of Therapeutics. Referring especially to the Products of the Pharmaceutical and Biological Laboratories of PARKE, DAVIS AND COMPANY. Duodecimo; 643 pages. Detroit, Michigan, 1909.

A System of Operative Surgery. By Various Authors. Edited by F. F. BURGHARD, M.S. (Lond.), F.R.C.S. (Eng.), Teacher of Operative Surgery in King's College, London; Surgeon to King's College Hospital; Senior Surgeon to the Children's Hospital, Paddington Green. In four volumes. *Volume IV.* Large octavo; 687 pages; 351 illustrations. London: OXFORD UNIVERSITY PRESS, 1909. Price, \$10 per volume.

The Psychic Treatment of Nervous Disorders. (The Psychoneuroses and Their Moral Treatment). By DR. PAUL DUBOIS, Professor of Neuropathology at the University of Berne. Translated and edited by SMITH ELY JELLIFFE, M.D., Ph.D., Neurologist to the City Hospital, New York, etc., and WILLIAM A. WHITE, M.D., Professor of Nervous and Mental Diseases, Georgetown University, Washington, etc. *Sixth Edition*, revised. Octavo; 485 pages. New York: FUNK AND WAGNALLS, 1909. Price, \$3.00, net.

Progress in Surgery.

A Résumé of Recent Literature.

Ligation of the Veins in Purulent Pylephlebitis Following Appendicitis (*Venenunterbindung bei eitriger Pfortaderthrombose nach Appendicitis*). PROF. WILMS, Basel. *Zentralblatt für Chirurgie*, No. 30, 1909.

Wilms believes that this is the first time the operation was performed. His case, in brief, is as follows: The patient came under observation with a large abscess on the appendix region, and the history of having had two chills in several days. The abscess was drained and two days later the patient began to have chills again. The fourth day after the abscess was drained, after the patient had had four chills with step-like temperature, Wilms exposed the ileocecal region widely and mobilized it by incising the peritoneum on the outer side of the cecum and stripping retroperitoneally with the finger. He then exposed the anterior aspect of the mesenteric vessels by dividing the peritoneum overlying them. The veins were isolated from two small arteries, and were tied off in two small bundles. A drain was carried down to the cecum. The patient suffered no evidence of disturbed circulation in the cecum, had no further chills, and made an uneventful convalescence.

The Basting Suture in Gastro-Enterostomy. J. W. LONG, Greensboro, N. C. *Southern Medical Journal*, June, 1909.

One of the drawbacks to the performance of gastro-enterostomy by the clamp method, according to the author, is the sliding of the mucosa of the intestine upon the muscular coat, so that when the suture is done it is difficult to keep these two coats in apposition. In order to guard against this, the author applies a basting suture through all the coats close to the line of incision. The uniting sutures are then placed so as to include the basting sutures. The latter sutures serve the additional advantage that they prevent hemorrhage. The author has tried this method and is satisfied of its success.

Stenosis of the Pylorus in Infancy. CHARLES L. SCUDDER. *The St. Paul Medical Journal*, May, 1909.

The signs of infantile pyloric stenosis appear unexpectedly. From being perfectly healthy, the child gradually wastes away, dying from what is usually called marasmus on the death certificate. The pathological findings are uniform, namely, a pyloric tumor about the size of the end of the thumb. There are no adhesions. Secondary changes in the stomach occur, such as muscular hypertrophy of the pyloric segment and, at times, dilatation of the rest of the stomach. The signs of the disease are vomiting, constipation, loss of weight, visible gastric peristalsis and a palpable pyloric tumor.

The only treatment is operative. There are numerous methods among which may be mentioned the Loreta operation, *e. g.*, the stretching of the pylorus with forceps which the author believes is dangerous; secondly, pyloroplasty, and thirdly, posterior gastroenterostomy which is the ideal operation.

A Report of One Hundred Cases of Herniotomy in Children, with End Results. H. C. SEAVER. *Albany Medical Annals*, June, 1909.

About 33.1-3 per cent. of all hernias occur before the age of fourteen. This relatively large frequency is explained by the congenital preformation of the sac in most hernias, coupled with the rough-and-tumble activities of childhood, and further by the fact that in early childhood the inguinal canal passes more directly and less obliquely through the abdominal wall than in the adult. The well-known preponderance of hernia in the male sex is due to the more strenuous exertions of this sex. About 25 per cent. of hernial patients quote a family history of this disease. Among the exciting causes of hernia in children may be mentioned whooping-cough, bronchitis, intestinal

constipation from injudicious feeding, continual injury, falls from a height, or any factor that tends suddenly to increase the intra-abdominal pressure.

In this way the intestine or omentum is made to seek and enter the congenitally performed peritoneal sac, and the extent to which the contents protrude determines whether the hernia be complete or incomplete. In acute hernia the extent of this protrusion corresponds to the extent of the preformed sac; but in chronic hernia the preformed sac, if not complete, may be made so by the gradual stretching of the sac by the sac contents.

In cases of strangulated hernia, too strenuous efforts at taxis may prove detrimental to the welfare of the child. If the strangulation be of short duration, the hernia may reduce itself during transportation to the hospital from the slight joltings incident thereto, or may be reduced by the Trendelenburg position, by a hot bath, or by relaxation obtained by anesthesia. If the strangulation be not thus relieved, herniotomy is indicated. The source of strangulation will usually be found to be a tight external ring, and this may be relieved by several nicks in an upward direction, using a blunt pointed bistoury. If an epiplocele be found, the constricted or gangrenous omentum must be removed. If the intestine be constricted, resection is unnecessary if the circulation of the gut is restored after the application of cloths wrung out of hot sterile water. In the case of gangrene, resection of the bowel and lateral anastomosis is indicated provided there is no perforation with extensive cellulitis. In this instance drainage of the intestine and wound is all that is required. After the infection has drained away, the fistula may be closed and a radical cure of the hernia performed.

The Galvanocautery as a Factor in Peritonsillar Abscess. IRVING WILSON VORHEES. *New York State Journal of Medicine*, April, 1909.

From a knowledge of the etiology and pathology of peritonsillar abscess it is quite obvious that any process, either natural or artificial which seals over the oral openings of the crypts, or which binds the pillars firmly to the tonsillar tissue, prevents drainage and produces in the tonsillar region all the conditions necessary to thorough incubation of retained bacteria. The galvanocautery seals over the crypts of the tonsil and thereby makes a closed cavity which is difficult to open properly. In three cases the pus, when allowed to escape, was very foul and not at all unlike that found in ischio-rectal abscesses. The author thinks that the use of cauterants and so-called "shrinking methods" in tonsillar tissues is often unwarranted, and undesirable. It is probable that the physician would find it wise to limit galvano-cauterization to the small ragged tonsil which lies fairly free in its bed and which is not adherent to its pillars. In any case, one should be careful not to interfere with free drainage from the crypts.

Factors in the Operative Treatment of Pulmonary Tuberculosis. W. WAYNE BABCOCK. *The Pennsylvania Medical Journal*, June, 1909.

An incision over the fifth intercostal space on the right side or the sixth intercostal space on the left side is made from the spine to the posterior axillary angle. The periosteum of the two adjacent ribs is divided and pushed off the bones, and the two ribs resected from very near their insertion to a point near to the posterior axillary border, all hemorrhages controlled, and the pleura opened in the line of the intercostal space. The ribs are now strongly retracted, preferably by a special double retractor. In this way, by the resection of two ribs, not much more formidable than some of the more extensive resections done for the drainage of an emphysema, an opening ten or twelve centimeters in breadth and width is obtained, sufficient to admit the hand into the thoracic cavity, and to permit the visual exploration of the lobes of the lung. If greater room is desired, the ribs adjacent to the opening may be weakened by a narrow-bladed osteotome, fractured and strongly retracted. This may be considered a normal exploratory procedure to be prac-

ticed in pulmonary surgery, precisely as the median exploratory incision is made in abdominal surgery. The mortality of such a simple exploration should not be great, provided the patient's condition is favorable. If feasible, the resection or complete amputation of a lobe of the lung may be performed through this incision, the vessels being controlled at the hilum of the lung, and divided ends of the bronchi occluded, the opening in the pleura closed, and finally the divided muscles and skin.

The dangers of operations for pulmonary tuberculosis include hemorrhage, pneumothorax, emphysema and infection. The hemorrhage of the chest wall is to be controlled by ligatures placed before the pleura is opened. The danger of hemorrhage from separation of adhesions or from the incision in the lung seems to have been greatly overestimated. In the case in which progressively clamping and tying the vessels at the hilum, no difficulty was experienced from hemorrhage when the large lobe was amputated. In opening tuberculous cavities in the lung, if the lung tissue be torn through, usually very little oozing will result, the vessels having been occluded by tuberculous process. The cautery is perhaps rarely, if ever, necessary for the control of hemorrhage. Operative pneumothorax has been especially dreaded, as it is frequently a cause of death in the thoracic operation upon dogs. In man the mediastinal partition is much firmer, greatly decreasing the danger of operative pneumothorax, and in tuberculous persons adhesions and exudates may still further immobilize the mediastinal wall, so that often no serious symptoms are produced by the operative pneumothorax. As a rule, in these conditions I believe that a positive or negative pressure apparatus is unnecessary.

Further Studies on the Presence of the Tubercle Bacillus in the Circulating Blood. RANDLE C. ROSENBERGER, Philadelphia. *New York Medical Journal*, June 19, 1909.

The author has now studied a series of 300 cases of active tuberculosis and has found tubercle bacilli in the blood in every instance. He thus confirms his previous observations upon 50 cases of pulmonary tuberculosis. The technic is very simple: Some blood is drawn from the arm into a little citrate of soda solution to prevent clotting; the blood is then antifungalized or allowed to stand over night; the sediment is spread on a slide and thoroughly laked, and the spread is then stained for tubercle bacilli in the ordinary manner. The author claims that he has obviated any suspicion that the bacilli which he sees are other than those of tuberculosis. In 32 cases in which a subsequent autopsy was possible, the diagnosis was confirmed in every instance. An interesting observation followed the injection of bloods which were positive into guinea-pigs. While some of these pigs revealed tuberculosis at autopsy, many did not; in the latter, however, the bacilli were demonstrable in the blood. The author is permitting a series of injected, but apparently healthy, guinea-pigs to live, in order to note whether any of these animals subsequently develop tuberculosis. The blood was also studied in 112 apparently non-tuberculosis patients; all were negative but six. Of the latter, some showed evidences of tuberculosis after careful physical examination, examination of the feces or at autopsy. The author believes that the presence of these presumably avirulent bacilli in the blood accounts for those instances in which a focus of tuberculosis follows a trauma or surgical operation.

A Case of Injury of the Pulmonary Vein (Ueber einen Fall von Verletzung der Vena Pulmonis). PROF. FREIHERR VON EISELSBERG, Vienna. *Archiv für Klinische Chirurgie*, Vol. 89.

The history of this remarkable case, which had already been presented before the XXXVIIIth Congress of the German Association for Surgeons, is briefly as follows: A morphine habitué, aged forty-three years, attempted suicide by stabbing himself over the heart several times with sharp-pointed scissors. When the patient came to the hospital, one hour after the self-inflicted injury, he

was in profound collapse and intensely anemic. The radial pulses were imperceptible; the heart-sounds were barely audible. Ten minutes after admission the patient was placed in a Sauerbruch chamber and the operation was begun (in the meantime unconsciousness had supervened and narcosis was unnecessary). The third and fourth ribs on the left side were divided, the pleura incised and the left lung pushed aside; then dark blood was seen welling up from an opening in the pulmonary vein immediately above the pericardium. The opening was $\frac{3}{4}$ cm. long and in the axis of the wounded vein. It was readily closed and made water-tight with six interrupted sutures. Immediately after the radial pulses became perceptible and steadily improved in quality.

After operation, the patient's condition was good, but he required large doses of morphine. One month after operation, signs of empyema appeared, and the plural cavity was drained after the resection of two ribs. Thereafter numerous subcutaneous abscesses developed, the general condition became poor, and the patient died fifty-four days after operation.

The post-mortem examination showed that the wound in the pulmonary vein had healed perfectly and that the patient would have recovered had it not been for his poor general condition (chronic morphine poisoning).

A Study of the Blood After Splenectomy, Following a Stellate Rupture of That Organ. JEROME MEYERS, Albany. *Journal of the American Medical Association*, April 17, 1909.

Myers reports the results of systematic blood examinations in a case of splenectomy in a boy eleven years of age, who suffered a stellate rupture of the organ from a fall from a tree. The operation by Dr. Vander Veer was a success and the recovery seemed complete, the boy a year later being apparently normal in all respects. The blood findings are tabulated and show a very remarkable variability in the red blood cell count, and the hemoglobin content normal or above normal, with no signs of even a moderate anemia. The leucocyte count was persistently above normal with a marked predominance of the lymphocytes. There is, however, a marked lack of neutrophile polynuclear cells which only dominated during an intracurrent gastric disturbance, showing that the ordinary relations between inflammation and polynuclear hyperleucocytosis are still striving to exist. Myers says: "That the removal of the spleen, which in embryologic life manufactures lymphocytes, gives a stimulus to the lymphatic apparatus of the body and thus causes a hyperlymphocytosis, is probable; that this stimulus is very great is evidenced by the lack of neutrophilic polynuclear hyperleucocytosis where we should naturally expect it; that it is lasting is evidenced by the relative and absolute hyperlymphocytosis seen later, after splenectomy."

Injection of Adrenalin to Avoid Hemorrhage During the Removal of Placental Rests After Abortion (Adrenalininjektion zur Vermeidung der Blutung bei Entfernung von Placentarresten nach Abort). O. GRASSER, Hermannstadt. *Zentralblatt für Gynäkologie*, June 19, 1909.

To avoid hemorrhage Grasser uses the following technic. The cervix is exposed and deep injection of the following solution is made into several points of the cervical tissue. Either 1 ccm. of 1% or 2 ccm. of $\frac{1}{2}$ % cocain solution, to which 3 drops of 1-1000 adrenalin solution has been added. It is then necessary to wait ten minutes. The operation of emptying the uterus is then nearly bloodless and the organ will be found firmly contracted, though the cervix remains patent.

A Warning Against Adrenalin (Warnung vor Adrenalin). N. N. *Zentralblatt für Gynäkologie*, June 19, 1909.

The anonymous author details two fatal results following the use of adrenalin injections into the cervix. In both cases, however, chloroform anesthesia was also given.

In both cases a solution of 1.0 c.cm. adrenalin to 10.0 c.cm. of salt solution was injected, the entire quantity of adrenalin given being 0.0003 (1/200). In the first case, one of total prolapse, vomiting set in, with immediate cessation of respiratory and cardiac action. The second case, one of chronic metritis, was identical in every detail, immediate death taking place during the cervical injection. Autopsy proved negative. Careful experimental study of the solutions employed showed nothing wrong or abnormal.

Report of an Interesting Brain Injury. H. B. GARNER.
Journal of the Michigan State Medical Society, June, 1909.

A boy, three years of age, was struck on the head by a circular saw, just above the right eye, making a cut nine inches long, dipping down into the brain for a distance of two inches. Examination showed a wound, filled with pieces of bone, strips of meninges and fine sawdust. The following day a hernia of the brain developed. A proper aluminum plate was applied. Some few days later a pocket of pus was discovered just above the eye, which did not cease discharging until a large piece of dura mater sloughed out. The wounds eventually healed, and two years later the boy was perfectly sound mentally and physically.

Penetrating Injury of the Brain. Recovery. W. ARMISTEAD GILLS, Richmond. *Virginia Medical Semi-Monthly*, May 7, 1909.

Gills reports the unique case of a white man, aged thirty, who had shot himself with a .32-caliber revolver, the ball entering the right side of the head, two inches behind the upper temporal ridge and one inch above the zygoma, traversing the frontal region, passing entirely through the bone of the opposite side at a point midway between the frontal eminence and the superciliary ridge, an inch to the outer side, a skin incision being necessary to remove it. When first seen the man was almost pulseless, but conscious; the eyes were too swollen to permit their complete examination. Brain substance was found on the cheek.

The wound was drained on each side and an ice cap applied. The pulse ranged from 85 to 116; respirations from 20 to 26. Speech was for several days incoherent, and the patient appeared confused, making several attempts to get out of the window. The only focal sign present at any time occurred on the third and fourth day—twitching of the toes and fingers. About the eighth day the edema about the eyes disappeared sufficiently for the pupil reflex to be tested. It was found normal. Drainage was employed throughout, the wound healing promptly. Under conservative management recovery took place. For about three months the man complained of a constant pain in the occipital region, partial deafness and loss of sensation in the finger tips, all of which have entirely disappeared.

A .32-caliber revolver fires a missile whose velocity is low (700 feet per second); hence it is readily arrested and lodged, as in this case. On account of the low velocity there is usually little lateral displacement of energy (explosive effect), and most of the bone and tissue destruction is confined to the track of the ball. When velocity is low, the entrance and exit wounds do not differ much in size, nor is there surrounding destruction of parts. The presence of lead in the tissue, shown in a radiograph, is due to the fact that this was an unjacketed bullet and easily chipped off by bone when it passed through.

On Percussion as an Aid to the Diagnosis of Fractures of the Skull. J. H. PRINGLE, Glasgow. *Edinburgh Medical Journal*, June, 1909.

The author has found percussion to be of considerable value in the diagnosis of cranial fractures. The percussion is carried out by striking the scalp directly with finger, while the occiput rests upon the hand. Inasmuch as the note is different when the mouth is open or closed, the examiner should see to it that the mouth is open or

closed throughout the examination. The note over corresponding points on the right and left sides of the skull should be compared. When a fracture exists in the neighborhood of any of the areas compared, the note will be found either (1) lowered in pitch over the fracture zone, or (2) in addition to the lower pitch, a cracked-pot quality is introduced. These changes, the author believes, will arise especially when there is comminution, or when the fracture is T, L or V-shaped. The author reports three cases in which this sign proved of diagnostic value.

An Interesting Case of Gangrenous Balanitis. WM. MEYER and WM. J. ROBINSON, New York. *The Critic and Guide*, August, 1909.

This case concerns a man of 60, whose ailment started in February, 1908, as an itching spot on the superior aspect of the glans penis, resembling a mosquito bite. It broke down into an ulcer, secreting freely and itching intensely. The ulceration progressed in depth and extent in spite of numerous antiseptic, soothing, astringent and other applications—involving the urethra and causing dysuria. By March, 1909, the glans presented a mass of ulceration on both the superior and inferior aspects and also within the meatus. Ill-smelling pus was exuding in abundance. Retracting the prepuce was difficult and painful. Microscopic examination revealed numerous cocci, but the Unna-Ducrey bacillus could not be identified. A mild cystitis existed. Copper sulphate solutions, 1-500 increasing to 1-100, were now tried, but in the course of the next month the condition became much aggravated. No relief had been secured in the preceding year by the use of lead and opium, bismuth subgallate, ichthyol, silver nitrate, balsam of Peru, sublimate solution, hydrogen dioxide, copper sulphate, etc., etc. In April, 1909, the patient was instructed to dip the penis four times a day for fifteen minutes each time in a 1:1000 solution of chinisol, afterwards dusting the glans with pure chinisol. The pain on urination disappeared within an hour or two after commencing the treatment. (Chinisol, besides its antiseptic properties, seems to possess a decidedly anesthetic effect in some cases.) The secretion rapidly diminished and there were healthy granulations visible on the third day. Within one week the entire glans was healed, without leaving any cicatrices, and it is impossible to tell at the present time that the glans had been the seat of deep ulcerations.

Three other cases of extensive phagedenic ulceration and chancroids have since been similarly treated and the results have been in the highest degree satisfactory in every case. If pure chinisol seems to be too strong it may be diluted with boracic acid or talcum, in strengths of 5 to 20 per cent.

The Luys Urine Separator. *Second Report of 41 Cases.* B. S. BARRINGER, New York. *Boston Medical and Surgical Journal*, April 22, 1909.

1. There is a class of cases in which knowledge of the condition of the kidneys is necessary and in which the ureters cannot be catheterized. These cases are those in which (a) one or both ureteral openings are obscured by cystitis or (b) in which the rapid excretion of pus or blood into the bladder clouds the bladder fluid. These are cases in which the separator is invaluable.

2. In children, the child's model of the separator, 17 F., may be used when ureteral catheterism is impossible because of the large size of the catheterizing instrument.

3. Cystitis forms no barrier to the use of the separator and to obtaining an exact knowledge of the kidney conditions in such cases. The exception to this is when a bacteriological examination is necessary, when catheterization of the ureters is more accurate.

4. Separation is much simpler than ureteral catheterization. The sterilization of the instrument is absolute, as the separator can be boiled. Infection of the ureters from the bladder is excluded.

5. In women the pain or discomfort caused by the separator is about the same as that caused by the use

of a simple examining cystoscope. In men the pain of separation is slightly more marked.

6. There are certain classes of cases in which the separator cannot be used. They are the following: (A) Those in which the bladder capacity is less than 20 ccm.; (B) those in which the urethra is not penetrable to the instrument, and (C) those in which the base or neck of the bladder is distorted by (a) marked prostatic hypertrophy; (b) extreme anteversion or ante-flexion of the uterus; (c) certain uterine tumors and (d) marked cystocele.

7. Slight hemorrhage occurs in some cases resulting from the bladder muscle grasping the instrument too vigorously and causing trauma of the vesical mucous membrane. This is shown by (a) small blood clots along the membrane when the separator is withdrawn; and (b) slight and equal increase in the fresh red blood cells of both sides.

8. Any inaccuracy of results obtained by the use of the separator is to be attributed to its employment in unsuitable cases or to a failure to recognize traumatic hemorrhage when it occurs, and does not arise from leakage of the urine from one side to the other.

The Value of Mixed Toxins of Erysipelas and Bacillus Prodigiousus in Inoperable Sarcoma, Based Upon a Study of Cases Treated During the Past Sixteen Years. WILLIAM B. COLEY. *Detroit Medical Journal*, June, 1909.

Coley believes that the mixed toxins should be used—

1. In all cases of inoperable sarcoma, except the melanotic, which are probably of epithelial origin.

2. In cases of sarcoma originating in the long bones, in which operation means the sacrifice of the limb.

3. Immediately after operation (within a week or two) in all cases of primary inoperable cases, as a prophylactic against recurrence.

4. In addition to the foregoing, after primary operations for carcinoma, as a prophylactic against recurrence.

The use of the toxins as a prophylactic after operation, he believes, offers by far the most important field of all, the proportion of recurrences in his own experience thus far being less than 25 per cent, whereas, in cases in which the toxins were not used after operation, the proportion of recurrences has been fully 75 per cent. While he does not believe that nearly so good results are likely to follow the use of toxins after operation for carcinoma, yet, inasmuch as the treatment, if properly given, is free from danger and entails little discomfort to the patient, it is certainly worth trying, and recurrence may be prevented in a goodly number of cases.

A Report of Two Cases of Osteoplastic Carcinoma of the Prostate, with a Review of the Literature.

GEORGE BLUMER, New Haven. *Johns Hopkins Medical Bulletin*, July, 1909.

The author summarizes as follows:

1. Carcinoma of the prostate gives rise to metastases in the bones in a much larger proportion of cases than any other form of carcinoma; probably in at least two-thirds of the patients in whom the disease is allowed to run an unobstructed course. 2. The clinically apparent bone metastases may be single. If occurring in the long or flat bones it may be taken for a primary bone tumor and removed as such. If occurring in the vertebrae it frequently gives rise to spastic paraplegia. 3. There is a diffuse form of bony involvement without evident deformity of the bones in which intense pain in the bones, often associated with spinal stiffness and accompanied by the general signs of a malignant growth, is the prominent symptom. 4. Symptoms pointing to the urinary tract as the original site of the disease are lacking in perhaps one-third of the patients. 5. In all instances where a male patient, especially one over sixty, presents himself with an apparently primary tumor of a bone or with signs of paraplegia, or with bone pains of obscure origin, a complete examination of the urinary system is indicated, even though no symptoms of urinary disorder be present. Needless to say, the

mammary gland, the thyroid and the region of the adrenals should also be explored. 6. The high percentage of cases of bone metastasis in this form of tumor and the relative rapidity with which it may take place makes it imperative that carcinoma of the prostate should be recognized and removed as early as possible.

Removal of Superfluous Hairs by Improved Methods.

H. H. PIRIE, London. *Lancet*, June 19, 1909.

Pirie advances the following modifications to the conventional electrical method: 1. The needle should always be connected to the negative pole. 2. Instead of a very fine needle, the author recommends the finest hypodermic wire; because of the blunt point and its extreme fineness, wire has less tendency to make a false passage than a needle; he believes, therefore, that there is better assurance that the bulb of the hair only is attacked. 3. The wire should be insulated with shellac except for a distance of one-sixteenth of an inch at the tip; this prevents scarring.

Hydriatic Treatment of Burns and Other Defects in the Skin (*Hydriatische Behandlung von Hautdefekten*). W. WIRZ. *Therapeutische Monatshefte*, June, 1909.

Wirz has for many years employed, with gratifying results, Winternitz's hydriatic treatment of burns, etc. It relieves the pain and supplies a temporary protective substitute for the skin. This substitute is a piece of thin linen fitting close over the defect and held by strips of plaster around the edges (or applied as a bandage). It is left for two or three days, kept cold and moist by a thick compress, renewed at first every minute, as the cold reduces the pain. Later the intervals are lengthened to five minutes or more, and by the second day the compress need not be renewed for hours. A temperature of 50° F. is most effectual at first, but later up to 68° F. may be employed. This dressing protects the terminals of the sensory nerves from irritation; the secretions become organized under the protecting shield, and the scar is much less disfiguring than with other methods. Winternitz leaves the linen for a week, merely washing over it frequently; Wirz changes it about the third day.

Dry Heat as a Therapeutic Factor in Gynecology.

G. GELLHORN, St. Louis. *American Journal of Obstetrics*, July, 1909.

The author applies the heat by means of a cradle-like box placed over the patient. Inside are eight electric light bulbs and several small bags of calcium chloride, which keep the air within the hot box dry. Under these conditions temperatures of 200-220° are readily born for from twenty to thirty minutes. Hot air is of use in pelvic exudates (after the febrile stage has passed); in infantile uteri to combat the amenorrhea, at times in virginal dysmenorrhea if applied a week before the flow, in post-operative shock to raise the temperature; in induration of wounds, in recent post-operative adhesions, etc. The applications must be carefully supervised by the physician, and the patient's individual tolerance established by beginning with short applications of lower temperatures (180°).

A New Method for Attempting to Secure Sphincteric Control After Colostomy. CHARLES RYALL, Brompton, Eng. *The Lancet*, July 3, 1909.

The rectus is split vertically, and the sigmoid is drawn out and divided at a convenient point. The lower segment is closed and replaced in the abdomen. The upper segment is made less bulky by removing the appendices epiploicae and freeing it of mesenteric fat, but without interfering with its blood-supply. A loop of muscle fibers is separated from the posterior aspect of the rectus on either side of the wound. Each loop is then drawn over to the opposite side of the wound, so that one loop overlaps the other. The overlapping loops thus form a ring

and through this the bowel segment is drawn. Sutures are then inserted to keep the muscle fibers together above and below where the bowel comes through. Anchoring stitches are inserted through the skin and muscle inside to keep the bowel in position. The wound is then closed above and below the bowel and the cut edges of the latter are sutured to the skin. A double sphincter is thus formed consisting of longitudinal and circular fibers. The longitudinal fibers are those of the anterior portion of the rectus and the circular fibers are formed by the loops from the posterior part of the rectus. This operation can be modified by making double loops on each side and making them overlap one another alternately.

The Treatment of Post-Partum Hemorrhage (*Beiträge zur Behandlung der Post-partum-Blutungen*). A. LABHARD, Basel. *Muenchener Medizinische Wochenschrift*, June 15 and June 22, 1909.

The author deals only with extreme cases of atony, in which ordinary measures, such as intrauterine irrigation, compression of the aorta, clamping of the uterine vessels, etc., etc., have failed. In nearly 39,000 labors, 22 such cases occurred. He has found that intrauterine tamponage here is useless, as the uterus fails to contract and bleeding continues.

Under these desperate conditions he makes a rapid laparotomy (10 cm. incision), draws out the uterus through as small a hole as possible and compresses the pedicle with an elastic ligature or even with a piece of boiled twine. The parietal peritoneum is then sewn to the cervical peritoneum and the cervix surrounded with gauze. Should no proper facilities be at hand, the uterus can be covered with sterile towels and the patient transported to a hospital. In any case the uterus is amputated and the stump treated extraperitoneally. Needless to remark, these extreme measures are rarely indicated.

"Desensibilization" Against Röntgen and Radium Rays (*Ueber Desensibilisierung gegen Röntgen- und Radiumstrahlen*). G. SCHWARTZ, Vienna. *Muenchener Medizinische Wochenschrift*, June 15, 1909.

In efforts to reach deeper parts the skin frequently suffers during x-ray or radium exposure, such as is required for blood diseases and other therapeutic measures. The author found that plant embryos, when in a "latent" state, did not suffer by exposure. He theorized and found that where the vital metabolic processes were nearly in abeyance the rays proved harmless. When applied to human beings he found that by markedly compressing the skin (anemia, retardation of lymph supply) both radium and x-ray caused no burns or even hyperemia, while uncompressed areas showed the usual effects. With radium the capsule was firmly pressed against the skin; with x-ray wooden plates were used to make pressure. Possibly other means—mechanical, chemical, thermal—may prove more effective.

Local Anesthesia for Dilatation of the Cervix and Operations Upon the Portio Vaginalis (*Beitrag zur Lokalanästhesie bei der Dilatation des Cervical-Kanals und Operationen an der Portio*). O. HENRICH, Strassburg. *Zentralblatt für Gynäkologie*, April 10, 1909.

The posterior vaginal wall can be readily rendered anesthetic by means of injection of small doses of adrenalin and eucain. (The anterior vaginal wall is almost insensitive), but the cervix requires more thorough measures. For the cervix the following formula is employed: Beta eucaine, 0.1; sodii chloridi, 0.06; adrenalin, 1-1000, 0.8; aq. dest. ad., 10.0. 1-1.5 ccm. of this solution injected in four spots deeply into the cervical tissues, and a little more injected into the cervical canal itself, suffice. It is necessary to wait five minutes, the cervix becoming noticeably pale from the effect of the adrenalin. Careful dilatation now produces no pain, and curettage may be performed without causing much discomfort. Small operations such as trachelorrhaphy or even amputations of the cervix can be painlessly performed by aid of this procedure.

The Treatment of Inoperable Cancer of the Uterus.

G. GELLHORN, St. Louis. *American Journal of Obstetrics*, May, 1909.

The author reports his experience of two years' treatment by means of his own method. Inoperable uterine cancer requires something to stop the hemorrhage and control the foul odor. Gellhorn under narcosis performs a thorough excochleation; dries the resulting crater and with the patient in Trendelenburg's position, by means of a Ferguson's speculum keeps from 1-2 to 1 oz. of pure acetone in contact with the lesion for from 15 to 20 minutes. The crater is then packed with acetone gauze. To protect the parts, the vulva and lower part of the vagina are well vaselined, the outside of the speculum also. All further treatment may be ambulant, as no more excochleation is required, and the acetone applications, twice weekly, can be made at home or in the office. Where the direct application of the acetone is difficult, as for instance, in the interior of the uterus, bisulphite of acetone, a white powder, may be applied with an insufflator. This salt soon sets free the acetone.

Acetone acts by hardening the tissues and thus rendering them less liable to secondary bacterial invasion. It has no curative action.

Lung Suture in Gunshot Wounds (*Ueber Lungennaht bei Schussverletzungen*). M. BORCHARDT, Berlin. *Berliner Klinische Wochenschrift*, April 5, 1909.

Borchardt reports two cases in which he performed the operation of suture of the lung for perforating gunshot wound. The continuance of hemorrhage was the indication for the operation. One patient recovered. In both instances the suture was highly effective in checking the hemorrhage. The author believes that this operation should be performed oftener than it is and mentions as indications, continued hemorrhage, expansion, pneumothorax and extensive subcutaneous emphysema. The author advocates an extensive exposure by means of a large osteoplastic flap. He says that the operation had best be performed under positive pressure with the aid of the Brauer apparatus.

What is the Effect of Specific Therapy Upon the Wassermann Reaction? (*Wie wirkt die spezifische Therapie auf die Wassermann—A. Neisser—Brucksche Reaktion ein?*) A. PÜRCKHAUER, Breslau. *Muenchener Medizinische Wochenschrift*, April 6, 1909.

The author has studied more than 800 hundred cases of syphilis in which the "deflection of complement" test had been instituted one or more times. As a result of his studies he concludes that the proper treatment of the disease, as heretofore, should consist of intermittent but frequently repeated courses of treatment (injection or inunction). The earlier and more energetic the treatment is instituted, the sooner does the reaction become negative. In late secondary or tertiary manipulations the reaction is much harder to influence than in the early stages. Leukoplakia is almost invariably of syphilitic origin. The treatment during the secondary period must be faithfully continued whether there are manifest symptoms or not.

A Simple but Rational Operative Method for Prolapsus Recti in Children (*Eine Einfache aber Rationelle Operative Behandlungsmethode des Prolapsus Recti bei Kindern*). G. EKEHORN, Sweden. *Archiv für Klinische Chirurgie*, Bd. 89, Heft 2.

In four cases of severe prolapsus not cured by other methods, the author has proceeded as follows: The prolapse is reduced, and one finger inserted into the rectum as a guide. A long needle armed with heavy silk is passed through skin and soft parts to one side of the lower end of the sacrum directly into the rectal lumen. The thread is withdrawn and the needle removed. Similarly the needle is passed into the rectum from the other side of the sacrum. It is threaded with the end of the silk strand lying in the rectum and is then withdrawn. Thus the two ends of the single silk suture come out one on each side of the sacrum. They are drawn taut and tied together across the sacrum. The suture is removed after 10 days.

The author has found both the immediate and late results perfect after this simple operation.

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FIBROID DEGENERATION OF THE APPENDIX VERMIFORMIS.*

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When any new subject is being developed in medicine we are attracted by that which is most obvious. The symptoms of infective appendicitis are so strongly in evidence that we have centered our attention upon these during the past fifteen years. We have generally overlooked the fact that there may be more than one kind of appendicitis, and the time has now arrived for us to elaborate the subject upon a basis of collected data of value.

I believe that we can differentiate four very separate and distinct kinds of appendicitis to-day.

Acute infective appendicitis seems to be due to a compression anemia of the soft inner structures of the appendix when they try to swell rapidly within the tight and narrow outer sheath, without much regard for the cause of the swelling. The swelling of the mucosa and lymphoid layers of the cecum give rise, in the course of an ordinary catarrhal colitis, to no grave consequences, but when these same structures try to swell within a tight outer sheath of the appendix, compression anemia results and bacteria attack the area which is temporarily unprotected. The presence of a concretion in the appendix will lead to the same sort of swelling. Traumatism will sometimes cause it. In any event the subject of acute infective appendicitis is now so well understood that I shall not go into details of that form of appendicitis here.

Another very interesting type of appendicitis is caused by extrinsic infection, as when tuberculosis of the peritoneum invades the tissues of the appendix, or when infection from an oviduct extends to neighboring organs. In this form the structures of the appendix usually swell very slowly and have time to adapt themselves to the environment so well that they are protected against the accidents of acute intrinsic infection.

The third type of appendicitis is the congestive type which commonly follows loose kidney, for instance, or with serous infiltration in the presence of ascites. In this class of cases also the swelling is so gradual in character that the tissues of the appendix acquire protection.

The fourth kind of appendicitis, I have left for the last, although it is probably the most common. It is my belief that the fourth type takes more patients to the doctors' offices than all of the other three and yet it is more often overlooked. I refer to fibroid degeneration of the appendix.

It is not only overlooked by physicians, but surgeons have often opened the abdomen believing that they were to find chronic appendicitis and observing an apparently harmless appendix, have closed the abdomen without removing it, believing that they had been mistaken in diagnosis.

Senn was the first to call attention to fibroid degeneration of the appendix, although he did not give it that name. He published an article in the *Journal of the American Medical Association*, March 24, 1894, describing what he called appendicitis obliterans, and says that the cases are marked by acute exacerbations, mild in character, of short duration, but extending over long periods of time. He observed that these appendices were gradually becoming obliterated. It is my belief that the appendices were not becoming obliterated because of inflammation, but that inflammation occurred incidentally as a feature of the changes taking place.

Eight years later Ribbert in his *Lehrbuch der Speciellen Pathologie*, 1902, stated that the appendix normally undergoes an involution process so that more than 50 per cent. of all cadavers show complete or partial obliteration of the lumen after the 60th year of age. Ribbert thought it was a gradual effacement of the lumen which was responsible for various forms of acute inflammation of the appendix, but my observations lead me to another conclusion altogether, for the reason that with the gradual disappearance of the soft inner structures of the appendix we lose the parts which are chiefly involved in infective processes. In the second place the appendix which is undergoing in-

* Read before the Medical Association of the Greater New York, April 5, 1909.

volution seems to remain in a condition of irritation which calls out persistent protection against invasion. The cause for this irritation I observed rather by accident while examining microscopically some appendices which had caused considerable disturbance and yet which did not give much external evidence of any lesion. It was observed that various structures had been replaced by connective tissue, but nerve filaments remained intact. These nerve filaments were surrounded by groups of new cells indicating the presence of a considerable degree of contraction. It seemed evident then that the ordinary contraction of hyperplastic connective tissue occurring in these appendices, as it occurs everywhere else in the body, was irritating the filaments of unprotected nerve.

Carrying this idea into the field of daily diagnosis and of observation it seemed very clear that most of us had been overlooking the real character of the class of appendicitis cases in which the patients go about from doctor to doctor, but do not go to bed. We find these cases for the most part in patients past twenty years of age, although sometimes the symptoms appear in patients who are considerably younger. We shall find most of our cases, however, in patients of middle age.

There are two separate and distinct sets of symptoms.

The local symptoms consist in occasional attacks of discomfort in the appendix region and these sometimes amount to actual pain; although for the most part it must be classified simply as discomfort. The patients are inclined to press the hand over the region of the appendix, or to rest against a chair or the edge of a table, pressing upon that point for relief. There may or may not be tenderness on pressure upon the appendix; sometimes it is tender and sometimes not.

The most important symptoms are those of a reflex character, and we have various derangements of function of the bowel commonly designated as intestinal indigestion. This is probably due to the irritation of the intimate ganglia of the bowel wall. The symptoms are protracted and often extend over many years.

In making a diagnosis of the condition we note such a history as I have just given, and add to that a tendency of the cecum and ascending colon as far as the hepatic flexure to remain persistently more distended with gas, than other parts of the bowel.

The most important symptom of all seems to be a hypersensitiveness at the right group of lumbar ganglia. If we make deep pressure upon the wall of the abdomen about one and a half inches to the

right of the umbilicus in order to press upon this group of lumbar ganglia and we find more tenderness there than over any other group of sympathetic ganglion, there is fair presumptive evidence that we are dealing with a case of fibroid degeneration of the appendix.

On account of my interest in the subject some of my assistants got to calling these cases of "Morris appendix." But in more distant circles the term came to stand for perfectly normal appendices, much to my regret, as I have always been in favor of leaving the normal appendix severely alone. In cases of fibroid degeneration of the appendix I usually tell the patient to try medical treatment first, but if the annoyance is sufficient to cause too much impairment of health, I advise the removal of the appendix, not on the ground of avoiding future danger, for I believe these patients to be protected against acute appendicitis, but on the ground of relieving present discomfort.

If a patient with fibroid degeneration of the appendix goes to a sufficient number of doctors he will get a sufficient number of opinions, but the time is coming when he will make the diagnosis of this condition as freely as we now diagnose acute infective appendicitis.

I have many specimens showing fibroid degeneration of the appendix all from patients who had been advised against operation when they were first seen, but who came back for operation subsequently on the ground that they had too many important things in life to look after and could not give so much time to the appendix.

In some of these specimens, no one would think from the external appearance of the appendix that it was abnormal in any way. And yet it is found by making a longitudinal slit that the appendix contains no lumen and the inner structures have been replaced by hyperplastic connective tissue. In some of the other specimens more or less lumen remains.

In other specimens there is not a single normal structure of the appendix left, but the fine semblance of that organ consists of connective tissue which has replaced lymphoid, mucosa, submucosa and even muscularis.

In the latter class of cases there is a tendency to disappearance of the mesentery of the appendix also, so that the fibrous strings remaining are practically retro-peritoneal.

Most of us can find cases of this sort in our clientele, and we do not tell the patients that they had better have the appendix removed because it may flame up and go off some time in the future. We had better tell them that they are likely to have a

good deal of intestinal indigestion while such appendices remain, and that we can stop the symptoms easily enough at any convenient time when it seems desirable to do so.

616 MADISON AVENUE.

WHERE IS THE APPENDIX?*

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The question "Where is the Appendix?" not infrequently passes through the surgeon's mind when, after diligent search in the anatomical geographical region, he fails to find the diseased cecal termination.

Anyone who has attempted to invade the abdominal province of the great domain of surgery, with the purpose in view of performing the smallest and most frequent of all abdominal surgery, the removal of a diseased appendix, is soon convinced that theoretical surveys are useless for practical applications.

During the fifth week of fetal development the cecum is situated high up and in close relation with the transversely placed portion of the large intestine; later, the blind end of this part of the gut descends, owing to the development of an intermediate portion which assumes the position and characteristics of the ascending colon, the cecum for a time is of uniform size; its further growth, however, is marked by the failure of the apical portion to keep pace with the increase in size of the remaining part of the gut; in consequence, that portion which morphologically represents the end of the cecum remains as a narrow tubular attachment connected with the head of the large gut; this constitutes the appendix vermiformis, the oldest part of the cecum.

All textbooks assert that the appendix lies in the right iliac fossæ, with its base corresponding to the midpoint of a line drawn from the anterior superior iliac spine to the umbilicus, or it lies in the pelvis, and when attached to a freely movable caput coil or when it possesses a long mesentery, it may lie in the left iliac fossa or near the spleen and beneath the diaphragm. These book descriptions are diagrammatic and do not apply to pathological contortions or resulting destructions.

When we confine ourselves to the catarrhal state of that organ, then the three muscular bands of the

colon easily lead us to the point of attachment of the appendix. (P. Muller.)

Extensive and firm adhesions, however, change the scenery of the operative field. The appendix may be literally buried in cicatricial tissue, so that it is scarcely recognized, and can only be liberated with great care and considerable force. The appendix may be found closely adherent to the wall of the cecum, so that it appears almost a part of it and cannot with safety be dissected from it, or it is caught between the coil of intestine, and is so firmly matted together by its two walls that separation from it, when chronically adherent, would involve the risk of tearing the gut.

Many appendices are blended by adhesions and apparently form part of the fascia covering the right psoas muscle. In some cases the sloughed appendix is found floating in a localized abscess cavity or it may be fished out of a diffused pyo-peritoneum. Now and then the sloughed area of a lost appendix is found on the cecum, with the appendix either migrating somewhere in the abdomen or swallowed as it were by the cecum, and passed through the large intestine, and out of the system.

We again find an appendix the tip of which protrudes through a slit in its meso-appendix. In such conditions the appendix twists on itself in passing through the slit.

Instead of an appendix we at times find a tumor, accompanied by the evidences of supuration and cellulitis. The omentum usually constitutes the main bulk of the tumor, being adherent or wrapped about the appendix, thickened and infiltrated with inflammatory products, and adherent to the other side to intestine or abdominal wall.

By nature's kindness, the omentum sometimes falls, as it were, over a ruptured appendix and prevents leakage from it. In such cases the omentum becomes highly inflamed, infiltrated, and often pyogenic. The appendix is then partly or fully enveloped by it, and is not readily found, unless carefully dissected out of its entrenched position.

Some appendices are mere vestiges, appearing as fibrous cords, so that a probe cannot be introduced further than a quarter of an inch. They appear very small and atrophied. When these are fused to inflammatory products, they constitute those cases in which the appendix is not found.

Not infrequently the appendix, even when not itself diseased is found wound around a loop of bowel and adheres with its tip to other parts and thereby produces internal strangulation. The coil of gut caught beneath it is constricted as if by a fibrous band.

* Read before the Williamsburg Medical Society, April 12, 1909.

The ovary or Fallopian tube, or both, may be fused with the appendix into one indistinguishable mass, mostly on the right side; in some cases it has been attached to the left tube.

E. Rochard, Paris, operated upon a woman, whom he believed to be suffering from salpingitis on the left side, found on opening the abdomen by a median incision, under extensive omental adhesions an appendix drawn across the abdomen, and fixed by its extremity to a mass formed by the left tube and situated entirely in the left iliac cavity, while its base was attached to the cecum which was situated in its normal position.

The appendix is always behind or above an enlarged uterus, whether the enlargement be due to physiological or pathological causes. Mixter, while operating for appendicitis complicating pregnancy found the appendix at the lower end of the kidney.

A cyst in the right iliac fossa proved to be a strangulated appendix without perforation. (Davis Colley, Op. cit. p. 437.)

In December, 1908, Dr. Delatour operated upon a boy ten years of age at the Jewish Hospital of Brooklyn, for a swelling in the right groin which proved to contain a gangrenous appendix with inflammatory omentum over it.

Floerken found the appendix in a child five years old in an umbilical hernia.

In a right femoral sac the appendix was strangulated two centimeters from its free end for 18 days, in the case reported by Bayer (*Centralblatt für Chirurgie*, 1886, p. 689).

Dr. Alfred C. Wood, of Philadelphia, found in a woman seventy years of age, a gangrenous appendix in a painful fluctuating swelling in the right groin which was supposed to be a suppurating inguinal adenitis. The cavity was found to be the sac of a femoral hernia.

In another case reported by the same author, a woman had a lump in the right groin, which had been present three weeks. The diagnosis of femoral hernia had been made. At the operation, the swelling was found to consist chiefly of serum, but the sac also contained the entire appendix vermiformis.

The appendix may be found in the right inguinal hernial sac and when in a fulminating state may give symptoms simulating constriction, when present in an irreducible rupture.

In 3,054 hernias operated upon by Hoffman, of Vienna, in the clinic of Prof. Colzi, of Florence, Coley, Bundshuh (Heidelberg clinic), the appendix was found 58 times, one in about 53 cases.

Gibbon quotes the combined experience of Coley and Halstead (1898) a total of 642 herniotomies, in

which the cecum or appendix was found in the sac 21 times.

In July, 1908, I saw Dr. Wm. Linder operate upon a large right inguinal hernia in the sac of which he found the appendix, cecum, ascending and transverse colon.

I operated on an infant five months old at the Jewish Hospital, of Brooklyn, on June 25, 1907, in whom I found the appendix in a mass which was made up of cecum, ascending and descending colon, and was in toto invaginated in the rectum and partly protruded through the anus. It was a rare form of intussusception.

In another case, I found the appendix, cecum and ascending colon lying over the descending colon. In this case the transverse colon was folded upon itself and was not adherent.

Where there is a transposition of viscera we must expect to find the appendix in the left iliac fossa.

Bary describes in (*Dissertation, Greifswald*, 1893) a woman, 42 years of age, in whom at the autopsy her perforated appendix $4\frac{1}{2}$ inches long was found behind the obturator foramen in a collection of pus. This case was, therefore, an obturator appendicular hernia.

Lennander mentions having observed in a dissection of a sixteen-year-old boy the cecum together with an appendix 9 inches long, lying against the spleen in the left hypochondriac region.

In non-descent of the cecum, there is a resultant corresponding abnormal situation of the appendix.

G. R. Fowler, in his treatise on appendicitis, quotes Turner, of Moscow, who made a careful study of 83 cadavers, in which the appendix lay freely in the abdominal cavity, with the following results:

In 51 it hung in the lesser pelvis.

In 20 it passed transversely on the psoas muscle toward the sacral promontory.

In 6 it lay freely upon the iliacus or upon the psoas.

In 2 it passed upward upon the lateral surface of the descending colon.

In 3 it lay in the mesogastric region, with the commencement of the colon, lying transversely.

In 1 it lay in front of a right-sided sigmoid flexure.

In 22 cases in which the appendix lay behind the first portion of the colon, between this and the posterior abdominal wall, its relative position was as follows:

In 4 it was curled up behind the ileo-cecal junction.

In 5 it was directly behind the cecum.

In 6 it passed intraperitoneally along the posterior or postero-median surface of the colon.

In 2 it passed in the same direction, extraperitoneally.

In 1 it passed the fundus of the cecum turned upward and backward, the appendix lying behind it.

Farnum reports a case in which the appendix was situated on the quadratus lumborum muscle, an inch and a half above the right iliac crest. Bland Sutton had a case in which the tip of the appendix was found in contact with the under surface of the liver.

The appendix has been found behind the peritoneum with no peritoneal covering, constituting a retroperitoneal hernia of the appendix.

F. W. Manley found an appendix coiled on itself and imbedded in cellular elements on the surface of the iliac fascia, entirely outside of the peritoneal cavity.

Joseph D. Bryant states in Mathew's *Med. Quarterly*, 1894, that he found in three cases the appendix outside of the peritoneal cavity.

Tillaux reports a case in which only the left testicle was found in the scrotum, and in which a diagnosis of orchitis and ectopia of the right testicle was made. On operating the appendix was found instead of the testicle.

MacEwen found in four male cases the appendix in the scrotum and in three of these the condition was present at or soon after birth.

In these cases the appendix may either descend into the scrotum alone or accompany the cecum. Where the appendix is present alone in the scrotum it may give rise to a characteristic condition. The neck of the scrotum reveals either the presence of what appears to be a thickened cord or even a double cord; while the extremity of the appendix lying curled up above the upper extremity of the testicle, together with its thickened mesentery, may simulate a second testicle. The mesentery of the appendix much thickened and fat laden is characteristic.

James A. Kelly, of Philadelphia, records the case of a man 43 years of age in whom, at the autopsy the cecum was drawn over to the median line and toward the pelvis by a cystic dilatation of the appendix. The specimens consisted of a cystic dilatation of the terminal portion of the appendix having the shape of a banana, and the size of a large one, occupying the pelvis, with its proximal part toward the rectum and its distal portion pointing upward forward and to the right into the ilio-cecal region.

Dr. H. Lilienthal reports three cases in the Mt. Sinai Hospital Report, Vol. 12, p. 297 and 301, where no appendix was found.

The first case was a boy $3\frac{1}{2}$ years old, in whom

at the spot corresponding to the stump of the appendix, there was a hole in the gut surrounded by a raw surface.

The second case was that of a man of 22 years with a history of three previous attacks of appendicitis. The appendix could not be located.

The third case, a boy of nine years with a typical history of appendicitis of one week duration. When operated upon an abscess cavity behind the cecum was evacuated, but the appendix could not be found.

Finney, of Baltimore, cites a case where an appendical abscess was evacuated but no appendix was found.

In July, 1907, I operated on a girl of 17 years at the Jewish Hospital, for an acute attack of appendicitis of two days' standing. In her case I found a sloughed area in the cecum with the usual location of the appendix, but the guilty organ was not located.

In another case on August 5, 1908, at the same hospital, while operating for appendicitis, found an intra-abdominal incarcerated inguinal hernia; the appendix, however, was not found.

As a theoretical outline of where the appendix is to be found we must bear in mind (a) the position with regard to the cecum; (b) the direction it may assume; (c) the relation it acquires to the neighboring peritoneum.

At the same time we must remember that the diseased appendix can be found in the rarest possible position, not as yet described.

700 ST. MARKS AVENUE.

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INFLAMED UNDESCENDED TESTICLE CAUSING OR SIMULATING APPENDICITIS; APPENDICITIS, A CAUSE OF UNDESCENDED TESTICLE. CASE REPORTS.

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In the study of such an important subject as appendicitis nothing is too trivial to note that may alter or modify its course, simplify operation for its relief or aid in clearing a doubtful diagnosis. It is for this reason I report the following cases with suggestions as to the lessons they may teach.

CASE I. November, 1905. Patient of Dr. Silver, of Windsor, N. J. Age 6. The boy had had "belly aches" at various times but no physician was called. Two weeks before he had been taken sick with pain, fever, rapid pulse, vomiting and constipation. There was a hard, tender swelling in the region of the appendix. His symptoms grew milder and when I saw him there was nothing to note except a well defined globular swelling which was far more sensitive than usual. The absence of the right testicle in the scrotum was not noticed before the operation. The incision was made over the tumor and a pocket of pus was entered and wiped out. In a search for the appendix several small collections of pus were found. A portion of tissue was loosened up which seemed to have a mesentery but did not end in intestine. This happens occasionally in the normal testicle—the epididymus and testicle are less intimate and a so-called meso-epididymus exists. Putting this aside for the time, I found the appendix, and removed it. Then lifting up the other body I enucleated from the back wall of the largest abscess a testicle of which this was the epididymis. There was a distinct cord, which was tied and the organ removed. The wound was drained, dressed, and the little fellow recovered. The testicle was larger than normal from swelling. The left testicle was found in the scrotum.

Dr. G. N. J. Sommer made the following report of an examination of both the appendix and testicle: "Specimens submitted consist of a vermiform appendix and a testicle. Appendix is about $2\frac{1}{2}$ inches long, split open along its free border. At the junction of the outer and middle third is a small perforation near the mesenteric border. Diameter esti-

mated to vary from $\frac{1}{4}$ to $\frac{3}{8}$ inch from tip to base. Its walls are about $\frac{1}{8}$ inch thick. Color, faded, owing to alcohol. Meso-appendix thin and ill developed.

"Microscopically the picture varies from that of an acute catarrhal process in the basal portion of the organ to an acute ulcerative and gangrenous process as one approaches the site of perforation. Sections taken from near the perforation show complete absence of all the coats with the exception of the circular and longitudinal coats which are densely infiltrated with round cells and leucocytes, the muscle bundles themselves being degenerated, and stained poorly. The other coats are replaced by granulation tissue made up of round cells, leucocytes and newly-formed thrombotic bloodvessels. Sections from below this line show absence of mucosa, here and there small ulcers with abscess formation in the submucosa. In many places the subperitoneal structures are much infiltrated and the lymph nodes swollen and degenerated. The mesentery in one portion is deeply infiltrated with round cells and there small abscesses can be noted. The bloodvessels are all widely dilated. The specimen therefore shows the typical picture of acute ulcerative appendicitis with perforation.

"Testicle $1\frac{1}{2}$ inch long, 1 inch wide and about $\frac{3}{4}$ inch thick. The specimen consists of two parts,—the testicle proper with epididymis, and spermatic cord, of which there is $\frac{1}{2}$ inch left. Microscopically it presents two portions—glandular substance and interstitial, respectively. The glandular structure consists of alveoli on a basement membrane made of flattened nucleated cells and fine fibrils upon which are layers of epithelial cells about two or three in number, the outer of columnar cells and the inner ones of round cells. Most of the alveoli are ill-developed in the large majority; no space between the walls of the tubules can be seen. No spermatogenesis is present. The interstitial substance is present in large amount, the tubules being quite wide apart. The interstitial substance consists of a network of fibrils containing many round and a few spindle-shaped cells. The testicular coats are normal except that they show on their surface some fibrinous exudation and in the outer coats there is considerable round cell infiltration. In the epididymis the tubules are normal in number and appearance and there is a considerable infiltration of leucocytes between the tubules. Vas deferens is quite ill developed, the muscularis being almost absent and somewhat embryonal in type."

CASE II. January, 1906. Patient of Dr. A. Fell, Trenton, N. J. Age 8. Has had several slight attacks of pain. Has been sick twenty-four hours with the classic symptoms of appendicitis. The tumor was harder and more circumscribed than usual. Right testicle not in evidence; left testicle in scrotum. Orchitis was suggested, but there was everything to denote appendicitis. The operation disclosed a sloughing appendix, which was removed. The testicle could be seen and felt just under the appendix, but no effort was made to enucleate it on account of the danger of opening up a new area of

infection. The patient recovered and has had no trouble since.

CASE III. September, 1906. Patient of Dr. Martin W. Reddan, Trenton, N. J. He presented a vague clinical picture of appendicitis. The tumor was hard, circumscribed and exquisitely tender. The right testicle could not be found; left testicle normal. He had a right congenital inguinal hernia for which he had consulted the doctor. A diagnosis of appendicitis was reached and as he had complained of the hernia only, the operation was planned to reach both. Operation by Dr. Reddan. He made an incision one inch above and parallel with Poupart's ligament into the peritoneal cavity. With a little difficulty the appendix was brought into view, found gangrenous, and removed. The testicle was found beneath the appendix and allowed to remain. The wound was closed in layers and the patient made an uninterrupted recovery. He is still well.

CASE IV. Intra-abdominal Orchitis Mistaken for Appendicitis. Descarpentiers reported in *La Presse Médical*, February, 1905, the case of a boy 11 years old who had entered Dr. Folet's hospital service to be operated on for perineo-scrotal hypospadias. Examination disclosed the fact that the child's testicle was displaced in the abdomen. October 11, urethroplasty of portion of the urethra was performed with the intention of subsequently making an orifice for the newly made canal, in the membranous urethra. In order to prevent contamination of the wound by the urine a catheter was inserted into the perineal orifice. The operation was successful, but on October 22nd fever and symptoms of appendicitis developed. Forty-eight hours later appendicectomy was performed. The appendix was found to be perfectly healthy, and histological examination proved it to be normal. On November 6th, the child developed orchitis of the left testicle, which lasted four days. Descarpentiers believes that in this case there was a double orchitis affecting first the displaced testicle and later the normal testicle. The catheterization after the operation for hypospadias caused a certain amount of irritation or traumatism of the membranous urethra, and as the orifice of the latter in the perineum was in close proximity to the anus, asepsis was difficult of realization, infection set in and spread first to the displaced testicle.

There are lessons to be learned from these cases. One cause of undescended testicle is appendicitis in the fetus. The right testicle is more often retained than the left. In every one of these cases the left testicle was normal. The mildest inflammation might cause a cobweb adhesion enough to stop the descent of this organ. Adhesions are frequently found in the peritoneum of the fetus, and Kelly and Hurdon mention this as a cause of the varying positions of the cecum at definite times. In "The Vermiform Appendix and Its Diseases," figure 23, there is shown a picture of adhesions extending from the appendix to the spermatic vessels.

In the first three cases the position of the testicle

just beneath the appendix is suggestive of the cause of the ailment.

I mention Case IV as a lesson in caution in reaching a diagnosis of appendicitis, and although this conjunction of conditions is a rare one, it might be well when called to see a boy supposedly suffering from appendicitis to examine for the testicles in the scrotum. The tumor in this condition is harder, more circumscribed and sensitive than in ordinary appendicitis. In the presence of pus it is better to let the testicle alone, although my first case had no complication after its removal.

The cases reported of death from peritonitis, the result of orchitis in an undescended testicle, with the symptoms of tympany, tenderness, constipation and vomiting, look suspiciously like a primary appendicitis.

POST-OPERATIVE DILATATION OF THE STOMACH.

That acute dilatation of the stomach, not necessarily in extreme degree, is fairly common, we believe to be true from our own experience. The patients with persistent distension, persistent nausea and vomiting, with the peritonitic facies and the thready pulse of a diffuse infection are often allowed to die because the case is believed to be one of peritonitic ileus for the reason that the customary methods of treating the latter do not prove effective. Enemata are followed by the passage of flatus usually in considerable amounts. Cathartics given by mouth are either vomited at once or they fail to produce the expected results. Liquids given by mouth are retained in part or whole for many hours, deluding the surgeon into the belief that nourishment is being absorbed. If, however, the stomach tube is used the amount of fluid that is obtained may be appalling. Again and again the stomach must be washed out until nausea ceases and until the stomach regains its normal size. Following repeated lavage the distension, the facies and the thready pulse disappear, and at once it is clear that one is dealing not with the dreaded peritonitic ileus, but with an over-distended, paralyzed stomach. More and more at our clinic are we induced to employ lavage when nausea or vomiting hesitates to disappear spontaneously, or if there is any distension that is not entirely relieved by enemata or the rectal tube.—JOHN C. MUNRO in *The St. Paul Medical Journal*.

A RÉSUMÉ OF THE VARIOUS OPERATIVE TECHNIQS FOR DISLOCATED KIDNEY, AND THE APPLICATION OF EACH.*

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In a paper¹ presented before this society in 1907 I added an effort in the direction of elucidating and establishing the individual and dependent pathology of dislocated kidney.

Until within recent years the major portion of the American medical body has decried and denied the existence of dislocated kidney as a symptom-producing pathological entity. To-day, leading internists, neurologists, gynecologists and surgeons recognize and have conclusively proven it to be the cause of a large number of cases of "chronic intestinal indigestion" of obscure origin, with its long train of symptoms which go to make "chronic ill health"; the general pathological picture of these patients simulating closely that of albuminuria. (Stirling, Pierre Marie,² Heubner³ and Suckling,⁴ quoted by the latter). The secondary gross complications which may arise in dislocated kidney, and the ones which claimed the burden of argument as set forth in the above paper are: appendiceal irritation or appendicitis; irritable or congested colon, the latter being produced by pressure on the ovarian or spermatic veins; stricture or occlusion of the bowel or bile tract; peritoneal adhesions involving the bowel, liver, kidney or bile duct or cholecyst; ptosis or ulcer of the stomach, produced by traction on the small arm with consequent pyloric obstruction, and other and less frequent secondary lesions. These findings are supported and verified by the experiences and researches of Suckling,⁴ T. Gelston Atkins,⁵ Albarran,⁶ Edebohls,⁷ Morris,⁸ Newman,⁹ Reidel,¹⁰ Gallant,¹¹ Stewart Tidey,¹² Harris,¹³ and Guterbock Sulzer and Böbinger, quoted by Harris, and a number of other investigators in this field of work, most of the credit for the development of the pathology being largely due the English and German workers.

Briefly speaking, operative cases of dislocated kidney may be summed up as follows:

(1) Cases presenting periodical crises (a) chronic recurrent headaches and other nervous surcharges, (b) gastro-intestinal, (c) renal, (d) hepatic, (e) appendiceal, and (f) various manifestations which this lesion exerts upon the bladder and pelvic organs.

(2) Pathologic Kidney. (a) albuminuria (pos-tural) (b) hydronephrosis (recurrent).

(3) Insanity. (Suckling).

(4) Persistent lumbar dragging or colonic back-ache which is unrelieved by medicinal treatment or by the use of an abdominal elastic.

(5) Dependent pathology. (a) appendiceal irritation, congestion or inflammation, (b) stricture or partial occlusion of the bowel or bile tract, (c) adhesions, (e) ptosis or ulcer of the stomach.

Having established the anatomical, mechanical, physiological and pathological conditions, in which operation is indicated, a consideration of the surgical means for their correction becomes appropriate. I use the word "surgical" without limitation, as in my opinion there is practically no medical treatment for this lesion, and I am supported in this position by the eminent English *neurologist*, Suckling.

In looking over the literature of this subject for operative technics for kidney fixation, I find their number to be legion, proof conclusive as to the extensive variety of the pathology of this trouble. Credit can be given, however, for but three complete methods of operative technic: that of posterior nephropexy, originated by Hahn¹⁴ in 1881; lateral nephropexy, originated in 1901 by Harris,¹⁵ and anterior nephropexy, devised by the writer¹ in 1903. All other presentations are but modifications in technic of one or other or all of the above methods. It becomes necessary, therefore, to limit the description of these various changes to the briefest consideration presenting a technical résumé which will array the facts as nearly accurately as possible in an attempt to establish a correct historical table of technic.

Mesne in 1561 first described movable kidney.

Riolan in 1682 recognized it as a "symptom-producing lesion."

Rayer in 1839 gave the first detailed account of its pathology.

Martin, of Berlin, was the first to remove a kidney for dislocation.

In 1874 Grinnell Dowell, of Galveston, attempted the first kidney fixation. He used a seton. It failed.

Hahn, of Berlin, in 1881, was the next to try to fix a movable kidney. Through a lumbar incision he sewed the fatty capsule to the back and plugged the wound with gauze. (A feature utilized later by Senn to cause granular adhesion of the peritoneum to the fascia). To Hahn, therefore, belongs the credit of having originated the operation of "posterior nephropexy." Following him came Küster, Esmarch and Delhaus. Weir did the first operation in America, in 1882; Newman, of Glasgow, the first in England, in 1882; and Bazy the first in France, in 1883.

* Read before the Mississippi Valley Medical Association at Louisville, October 14, 1908.

Ferguson was the first to advocate an incision from the front and rear in an attempt to meet and deal with the many pathological conditions requiring correction in an exaggerated pathology from dislocated kidney.

Rosenberger was the first to act upon this suggestion and fix the kidney through a large anterior median incision.

Ferguson and McArthur were the first to pocket the kidney under the transverse fascia.

Jonnesco, Küster and Löbstein were among the first to parallel the twelfth rib with the initial incision, a point which Ferguson,¹⁵ of Chicago, uses in his recent technic.

Wolf and Löbstein first removed the entire capsule proper, as did Edebohls, who said, "These kidneys have remained better fixed." Edebohls also says that "To anchor only the lower half of the kidney invited failure." This statement would tend to discredit the Goelet¹⁶ technic, also Bishop's¹⁷ modification of the writer's anterior technic for dislocated kidney, and in which he turns down the lower fourth of the anterior half of the capsule and sutures it with the peritoneum and its underlying fibers to the fascia, without attempting to support the upper pole of the kidney.

Shoemaker was probably the first to buttonhole the fatty capsule of the kidney. This he did in an attempt to close the pocket in which the kidney wanders. This is almost identical with the operation of Longyear, who buttonholes the renal and fatty fascia, drawing through the opening thus made the subperitoneal connective tissue fibers (which he styles the Longyear ligament) and attaching them behind the lumbar fascia. Shoemaker then uses the Brödel suture in securing the body of the kidney.

Reed,²⁰ of Cincinnati, has modified the buttonholing method of Longyear by snipping the fibers and suturing them to the wound. Reed's modification of the Longyear operation would furnish an excellent technic if there were no dependent pathology to be corrected and if the so-called nephro-colic ligament were a fixed anatomical entity. Recognizing the importance of correcting attendant lesions in this trouble, Reed has recently utilized my method of anterior nephropexy and has applied it with success.*

Tuffier,¹⁸ Jacobson and Böeher first split the kidney capsule and turned the flaps back. Vulliet (quoted by Morris) used a strand of fascia from the erector spinæ muscle and sub-run the kidney

capsule throughout a considerable portion of its length.

Guyon, Hahn, Ceccheretti, Albarran, Bassini and others were the first to pass the suture around the lower rib. This idea is embodied in the recent operation of Ferguson and has been carried a step further by Billington,¹⁹ who turns down one half of the capsule from the posterior surface and suspends the kidney from the twelfth rib by drawing the capsule through the eleventh intercostal space and suturing the deflected part to the kidney below the line of dissection.

Newman, Lane, Edebohls and others sutured only the deflected flaps of kidney capsule to the fascia and muscular structures, thereby *hanging* the kidney by its capsule.

Paoli and Duret first removed a piece of the twelfth rib and anchored the kidney to the remaining portion of the rib and to the soft parts which formerly composed its bed.

Gardner and Melbourne placed two stitches through the fatty capsule and two kangaroo tendons through the kidney substance with the result that "movement was absolutely prohibited."

Albarran denudes the kidney, removes fat and passes double threads. The first thread goes through the upper pole and including the fascia and twelfth rib and coming out through the upper edge of the wound. The second passes through the lower pole and edge of the wound and includes the fascia and deep part of the muscular tissue. The third passes through both edges of the wound but is buried deep in the tissues.

Morris, of London, performed the above operation, but did not denude the kidney. He is partial to Vulliet's and Tuffier's methods, but has no single favorite, a point well worth remembering in operating for dislocated kidney. Morris was the first to claim that denudation was unnecessary to secure union of the kidney to the fascia. Goelet, probably acting upon this suggestion, gave to the profession his operation, which consists of two Brödel sutures sub-running the capsule and placed, one at the center of the kidney and the other half way between the latter and the tip of the lower pole, and tied over a roll of gauze placed externally over the upper angle of the wound. The only difference in this method and the Brödel technic is that the base of the triangle formed by the sutures points downward in the latter, while in Goelet's operation the sutures are directed with their bases upward. Morris latterly takes the ground that the kidney is better fixed when denudation is done and that no sutures are necessary in the latter method. This principle is

* A résumé of case reports from various surgeons as to the final results secured in the application of anterior nephropexy (or rather peritonopexy for dislocated kidney) is now under preparation by the writer and will be published later.

recognized and embodied in the technic as set forth by the writer.

Bazy, 1899, places three sutures under the capsule and includes the twelfth rib, and ties. The cellular and fatty tissue are also sutured. This is probably the first recognition of the necessity for closing the pocket in which the kidney slips in order to successfully support a fallen kidney.

Reed, of Columbus, acting upon the suggestion of Ferguson, held the kidney in position through a median abdominal incision which he inserted sustaining sutures through the unincised lumbar region.

Guyon was the first to remove the fat and fibrous capsule.

Senn²¹ and Deaver suspended the kidney with gauze packing, causing elimination of the pocket by granulation. (Gauze packing for drainage was first used by Hahn.) This is rather a bunglesome, unsurgical method of securing closure of the pocket, much time being required for the process of healing.

Edebohls fixes the kidney by four suspension sutures placed through the deflected capsule; thus *suspending* the kidney by the latter fragile membrane. (Tuffier, Jacobson and Böecher.) This operation is wrong in principle and would be equivalent to attempting to support the water at the upper end of the well instead of allowing it to rest in its natural bed at the bottom, thus banking it from below. The same applies to the support of a dislocated kidney. This principle is well brought out in the technic of the writer.

Murphy (quoted by Edebohls) incises the capsule and makes a scroll of either flap, suturing the whole through the kidney substance to the fascia.

Edebohls was the first to indicate the association of kidney ptosis and appendicitis and he performed the first lumbar appendectomy and nephropexy, 1895. Cartledge, of Louisville, has also employed this technic.

In 1901, Harris,¹⁸ combining the ideas of Edebohls of removing the appendix and fixing the kidney through the same incision, and elimination of the peritoneal pocket (Bazy), gave to the profession a lateral lumbo-abdominal technic for the fixation of the kidney. His incision extends from the head of the twelfth rib downward toward the appendix in the line of the fibers of the external oblique. After cleansing away the fat he sutures the renal fascia with the peritoneum to the lumbar fascia, working behind the lateral peritoneal fold.

In 1905 I first published my technic for anterior transperitoneal kidney fixation.¹ This technic is as follows: The initial incision extends from the external border of the rectus to the mid-lateral lumbar

line, one-half inch below the costal border. After dealing with complications, *e. g.*, appendiceal lesions, bowel stricture or occlusion, adhesions, bile duct trouble, etc., the peritoneum in front of the kidney is incised and the kidney is delivered into the abdomen. This incision is usually made from the upper right kidney pole to the lower left. The fat surrounding the kidney and the capsule of the latter, is now cleaned away, the renal fascia being preserved. The lumbar fascia behind the kidney and peritoneum are abraded with the *naïl*. The kidney vessels and ureter are explored for kinks or other pathological condition, as are also the duodenum, and bile ducts, the latter up to its union with the bowel. The peritoneal incision is then closed (catgut or small silk) and the kidney is placed in an easy position with the upper pole leaning slightly toward the spine and the lower pole slightly downward and outward, and the peritoneum is sutured to the denuded lumbar fascia throughout its plane of separation. If it is sufficiently lax to permit it the peritoneum is imbricated at the lower pole of the kidney during the process of suturing. The raw surface thus produced insures prompt union of the subperitoneal fibers and posterior surface of the kidney to the fascia, with union of the anterior surface of the kidney to the post-peritoneal fibers, thus insuring a "sheet-like" support to the anterior and posterior surfaces of the kidney and furnishing a shelf-like support to the lower pole of the latter organ.

This procedure provides a deeper renal fossa, thereby eliminating the anatomical deficiency as claimed by Landau, Sulzer, Kuester, Becker and Lenhoff and Harris (the last four quoted by Harris), without the necessity of the unsurgical procedure resorted to by Ferguson¹⁵ of dissecting the lumbar fascia and suturing it to the lower pole of the kidney. It also gives excellent opportunity of correcting the dependent pathology as heretofore tabulated by me¹ and mentioned by Edebohls, Morris, Litten, 1880, Reidel, Tilmans, 1887, Gallant, Von Tischendorf, Lane, Holmes, Cordier, Rebold and Lejans and Walker and Wendel, the latter being the first to dissect the kidney from the colon and fix it. Tuffier, Morris, Paule and others had cases of a similar nature, as did Edebohls, who remarked "that the near future may bring us a nephropexy by which we will be able to apply such surgery to the gall tracts as is necessary to correct these complications." This suggestion has been met and fully dealt with by the anterior technic of the writer. This technic not only eliminates the pocket in which the kidney slips but affords support to the latter organ from below, a

point which was formerly shown by the writer to be necessary to the success of these cases.

Leroque, Richmond, Va., uses one U-shaped Brödel suture and denudes, merely a combination of the ideas of Brödel, Goelet and Bruce Clark.

Noble,²² Philadelphia, 1900, fixes fat capsule and kidney substance by buried silk-worm gut sutures.

The simplest form of nephropexy is that devised by Bruce Clark,²³ who denudes slightly and fixes the kidney by silk sutures placed through the capsule and kidney substance.

Morris⁸ first turned a flap of kidney capsule outward and sutured it to a slit in the psoas muscle.

Tuffier¹⁸ did the first partial decortication in 1889, in order to get union of the fascia and parenchyma. There are many modifications of this procedure but all have the same purpose in view. He stripped fat and capsule from the convex border of the kidney and sutured it into the wound. The first suture was fixed through the periosteum of the rib and the next two through the fascia and muscular tissues.

Jacobson was the first to employ the incision parallel to and below the twelfth rib. The capsule was then incised along the convex border of the kidney and the organ pocketed in the wound with twenty sutures. This method is almost identical with the new technic recently exploited by Ferguson.

The method of Lane has ingenuity. He strips the kidney from fat, fascia and connective tissue and incises the capsule in ten triangles with their bases turned inwards. He twists each of these apices of capsule triangles into a ligamentous cord and draws them through small incisions in the fascia.

Newman⁹ has a method similar to that of Lane. Through a vertical incision he strips the capsule for a third of an inch and sutures. He inserts a drainage tube for the purpose of producing granular adhesions. (Senn.)

Jonnesco, 1897, strips the capsule from the outer surface and for about half an inch and sutures to the periosteum of the eleventh and twelfth ribs, using silver wire.

In his original method Hahn sutured through the fatty capsule and the fibrous capsule proper, one suture having been placed on the mid-convex border and one each on the posterior and anterior surfaces.

Goelet,¹⁶ as stated, cleanses fat and fascia from the kidney and inserts two Brödel sutures sub-running the fibrous capsule only, and ties them over a roll of gauze externally in the upper part of the wound. Sometimes he packs the lower end of the wound with gauze as done by Hahn, Jaboulay and Senn. He says that "fixation of the kidney lower than normal is worse than mobility" and that "this

is what produces the great percentage of failures." (Herein, although advocating it, he probably unwittingly recognizes the cause of the great number of failures in posterior nephropexy; thereby emphasizing the inefficiency of its combined technic.) Morris⁸ also supports this statement, which is in direct opposition to the claim of Harris¹³ that "the kidney should not be placed too high as it is liable to cause great pain and suffering," he having seen two cases which had been operated for dislocated kidney, and which, on account of the high fixation required reoperation. If Goelet had said that fixation without correction of the dependent pathology is worse than mobility, his statement, in view of present day findings, would have been strictly true.

The writer takes the following ground concerning

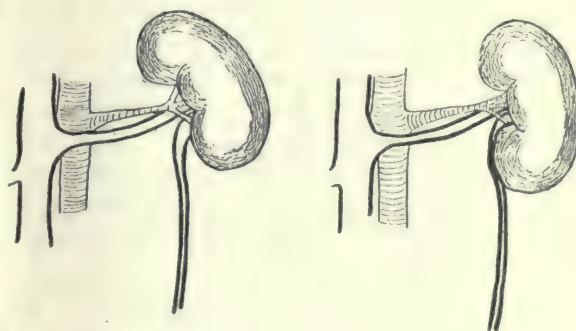


Illustration Showing How a Slight Dislocation of the Left Kidney May Occlude the Ureter and Lead to Violent Attacks of Diet's Crises and Even Far Greater Pathology When Allowed to Recur for Years Undiagnosed and Unsuccessfully Treated.

the placing of a dislocated kidney: Place the organ well up into the lumbar region behind the liver if it can be demonstrated that the latter organ glides down over the kidney during inspiration, as the normal anatomical position of the kidney in many subjects is behind the liver. In those subjects in which the renal fossa can be demonstrated on the under surface of the liver, the fixation should be downward out of the way of the superimposed pressure of the liver. In the latter class of cases great caution should be exercised as to the dependency of the ureter. If necessary to produce free drainage from the kidney pelvis, the peritoneum below the ureter may be gently separated from the lumbar fascia with the finger so that there may be no possibility of obstruction to the outflow of the urine. This point was suggested by the accompanying illustration of Suckling.

Morris,²⁴ of New York, sub-runs the capsule with a Brödel suture, up and down the convex border on both sides and ties to any substantial structure in reach. The fat is removed, the capsule is split along the dorsum to aid adhesion and relieve congestion,

and then gauze packing is inserted (Senn). Morris asks, "What does this operation accomplish?" and he answers, "It *hangs* up the kidney." [I emphasize the word "hangs" and suggest that this is precisely what we do not want to do.] We wish to "fix" the kidney by replacing firmly its supporting structures. The gauze first drains (Hahn) and then causes obliteration of the retro-peritoneal pouch by causing granular adhesions (Senn). In order to convict Morris' technic of its shortcomings he should also have asked, Does it correct the dependent pathology?

Ferguson incises an inch below and parallel to the twelfth rib (an incision first employed by Jacobson), the twelfth nerve being guarded from injury; the kidney is brought down and the surrounding fat is stripped and pushed below the kidney. This point of the technic is open to criticism, for if there be any considerable quantity of fat it will intrude upon the lumen of the bowel when thus placed. "Reform bed of kidney if obliterated by separating the adhesions of the liver and diaphragm." "Split capsule along convex border and peel from parenchyma and insert two chromicized catgut sutures through each flap of the capsule." "Pass upper sutures from in out over twelfth rib and the lower ones through the upper angle of the wound; the upper sutures being sometimes fastened to the diaphragm." "Dissect a flap of fascia from the quadratus lumborum muscle in order to deepen the renal fossa and sew it to the anterior surface of the kidney." "Place a cigarette drain in the wound." (Ferguson in *J. A. M. A.*, August 15, 1908.)

The similarity of this operation to Jacobson's is elsewhere indicated.

Bishop,⁷ of Manchester, employs my technic modified in two details. (1) He turns down the lower one-fourth of the anterior capsule of the kidney and sutures through it the peritoneum with its underlying connective tissue fibers and renal fascia to the lumbar fascia. 2. He puts the returning sutures clear through the muscular wall of the back and ties them beneath the subcutaneous fat. In this operation only one-fourth of the anterior surface is denuded. He reports a number of successful cases thus operated upon.

Bell, of Plymouth, New Hampshire, states that the right kidney is found movable fifteen times more frequently than the left. This is in direct contradiction to the statement of Reed, of Cincinnati, who claims the left to be more often movable. Bell supports his claim by citing a number of cases operated upon. I take the ground that the left kidney is at fault many more times than has been suspected in

the past, but not, however, as frequently as is the right. Dislocated left kidney is more often overlooked on account of the scant gross dependent pathology usually produced by a dislocated left kidney. On account of the latter, its effects upon the nervous system are more insidious and therefore more dangerous. These effects are caused by the retention of urinary excrement, produced by the pressure of the lower pole of the kidney against the ureter, thereby occluding its lumen. These cases are diagnosed by the use of the Luys separator; the amount of solid matter in the urine being measured and compared to that of the average. Suckling of Birmingham, and Roux,²⁵ of Lusanne, have demonstrated the above point, which is brought out in the accompanying illustration, after Suckling.

Reidel¹⁰ says that "the smallest kink in the bowel or the slightest adhesion of the latter is capable of producing the most troublesome symptoms." This statement is absolutely true, the writer having been able to verify it in his own operative cases and in those of others.

Billington,¹⁶ in an excellent article upon this subject, describes the following technic: The upper half of the fibrous capsule covering the posterior surface of the kidney is dissected and pulled down through an opening in the eleventh intercostal space just behind the head of the twelfth rib, and sutured to the kidney below the line of dissection, thus forming a sling-like suspension of the organ. Sutures (Brödel) are now placed beneath the capsule and tied over rolls of gauze at the upper part of the incision externally (Goelet).

In sifting the literature upon this subject I have found that there is such a conflict of statements and claims to originality for the various operative measures that it has been necessary in several instances for me to depend upon the burden of evidence in determining the rights of priority. Much of the early biography has been omitted in the appended table for the reason that these efforts are a matter of medical history and therefore the common property of all.

I believe that in view of the pathological findings I have presented to the profession on former occasions, and in view of the fact that they have been duly supported by the experience of the workers in this field of the past thirty years, the application of these operations can be best left to the judgment of the individual surgeon. The one operation which will reach all cases I believe to be the anterior technic I have presented. It will apply in complicated and uncomplicated cases and in emergencies of all kinds. This operation is now being applied by

several of our best known surgeons at home and abroad. For patients who do not present symptoms of irritation of the peritoneum, I believe the operation of Harris would be effective. The case reports of Harris corroborate this belief.

In closing the writer wishes to emphasize some important points to be borne in mind while operating to relieve the symptoms produced by dislocated kidney:

Do not attempt to "hang" the weight over the "hole" by suspension of the kidney by its capsule or fragments thereof. Never "fix" the kidney through a lumbar incision, working as you must do in the dark without being able to discover adhesions, kinks, etc. Never resort to the unsurgical procedures of removing a portion of the rib; suturing a flap of the capsule over or to the rib; dissecting off a piece of the lumbar fascia to deepen the renal fossa; placing deep sutures or any sutures at all through the kidney substance or its capsule; trying to produce granular adhesions of the peritoneum to the fascia by packing with gauze; or placing sutures and confining the attachment to the lower pole, allowing the kidney to tilt forward and be crushed into that position by the superimposed weight of the liver. Last—Operate from a point of entrance by which you may be assured of meeting and dealing with all complications by the combined experience of touch and sight.

The writer wishes to acknowledge his indebtedness to the early works of Edebohls, Morris, of London, and Harris, and to the more recent excellent work of Suckling, of Birmingham, England, Roux, of Lusanne, Stuart Tidey, of Montreux, and Atkins, of Cork; and to William Billington, of Birmingham, for valuable suggestions, facts and verifications, received largely through personal correspondence.

I venture the prediction that in the near future all posterior operative procedures and all operations intending to "fix" the kidney will become obsolete, and only those measures will be applied which relieve and replace an obstructed ureter, eliminate the pocket and support the kidney at its lower pole, while making sufficient correction of a disabled peritoneum to prevent either the upper or lower poles of the kidney from protruding into the peritoneum or bowel.

CORNER SIXTH AND ELM STREETS.

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GASTRIC ULCER.

The size of the ulcer, the depth to which it has penetrated, the duration of the disease, the part of the stomach wall affected and the ability of the patient to withstand pain, are determining factors in the value of pain as a diagnostic feature in gastric ulcer.—W. D. HAINES in *The Lancet-Clinic*.

REMARKS ON THE SURGICAL TREATMENT OF CHRONIC NEPHRITIS.*

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The first operation undertaken upon the kidneys with the deliberate purpose of bringing about a cure of chronic Bright's disease was performed by Dr. George M. Edebohls, on January 10, 1898. This operation consisted in extensive decapsulation, followed by fixation of both kidneys.

The patient, a girl of twenty, was suffering from loose kidneys and a chronic nephritis. Frequent subsequent examinations of the urine following the operation indicated that the nephritis had disappeared. This case, together with a report of five preceding cases, was published in the *Medical News*, April 22, 1899.

A great deal of discussion was aroused some years ago, as to the first surgeon to perform the operation for the relief of chronic nephritis. I firmly believe that there is existing proof of Edebohls' claim in the Rose case, and that Gibbons has proven without question in his article in the *New York Medical Journal*, in 1903, Edebohls' claim to priority over Ferguson's. Therefore, the credit must be given to our departed friend and colleague, Dr. George M. Edebohls, for first directing the attention of the profession to the treatment of Bright's disease by surgical intervention.

Dr. Edebohls conceived the idea of operating upon cases of chronic Bright's disease, from observations of the improvement of the urinary condition in cases upon which he operated for movable kidneys.

The first authentic record of a case that I was able to find was by Reginald Harrison, who in 1878, performed decapsulation upon three cases to relieve intracapsular pressure. I am unable to find what caused him to believe there was any intracapsular pressure, or what was the result of his operation.

In 1881 LeDruba split the capsule of the kidney to allow expansion; the reasons for which, or the results, I am unable to find.

So we go on until Harrison in the London *Lancet* in 1896 published the report of three patients suffering from nephritis and hematuria, where the kidney was cut down upon in the expectation of

finding a renal calculus or pyelitis. No obvious cause for the symptoms was discovered, but the pain, hematuria, and the albuminuria disappeared after the nephrotomy and the patients completely recovered. Harrison attributes the success of the operation to the relief of tension, accompanying the inflammation of the kidney, which followed the division of the kidney.

Israel (*Chir. Klin. der Urinen Krankh.*, Berlin, 1899), also reports nephrotomies in 14 cases of unilateral hematuria and nephralgia, which were supposed to be due to calculus but were in reality cases of chronic Bright's disease. Two of these patients died of severe double nephritis, and six completely recovered. In three cases the symptoms recurred at intervals, and in two, the operation was a failure.

Israel disclaims any intention of curing chronic Bright's disease by operation, in general, and regards nephrotomy as indicated only in cases of hematuria and nephralgia where the symptoms become severe and medically uncontrollable. He believes that the relief of the symptoms is due to a lessening of the intrarenal pressure within an unyielding capsule, which interferes with or suppresses blood circulation and urinary excretions. He accounts for the disappearance of all the symptoms when only one kidney has been operated upon, by assuming that the disease is confined to one kidney and that the other is healthy. He calls attention to the well-known fact that a tissue which is the seat of a chronic inflammation usually takes on healthy action when the diseased structures are split, and he believes that after nephrotomy new venous channels form between the kidney and the surrounding tissues; in this way relieving congestion and lessening the intracapsular pressure.

Pousson discusses cases of chronic Bright's disease where nephrotomy was done by himself and others, with favorable results. He explains the favorable outcome obtained by assuming that the nephrotomy relieves the pressure and permits the excreting cells of the kidney which are still undamaged to resume their functions. He, however, is of the opinion that nephrotomy should only be done in desperate cases of uremia, where the usual medical treatment has been tried without success.

In England, Germany and France, surgical measures were adopted for the relief of pain and the presence of blood in the urine which did not come from the lower urinary tract and in severe cases of uremia, while Edebohls decapsulated the kidney instead. He believed that by decapsulation he removed the impervious capsule of the kidney and

* Read before the Celtic Medical Society, New York, January 28, 1909.

established a vascular connection between the blood supply of the kidney and the blood supply of the surrounding tissues. Edebohls believed that the increased blood supply leads to an absorption of the interstitial or inter-tubular exudates, freeing the tubules from compression and promoting a reestablishment of the normal circulation, with regeneration of the epithelium capable of carrying on the excretory function.

An enormous amount of work has been done and volumes have been written upon the cure of chronic Bright's disease by surgical intervention, but I shall not go into this with much detail. When we read the glowing reports of Edebohls, Ferguson, Lloyd, Gibbons and others it makes us feel that at last we have arrived at the time when the hopeless conditions that were the result of chronic Bright's disease, will be no more. But when we make further investigation of these results, the outlook does not appear as brilliantly hopeful.

Let us take first decapsulation of the kidney and its reported results. It is claimed by some of the writers that when the capsule is removed the kidney is permitted to expand, thereby relieving the pressure on the kidney tissue itself, causing a greater amount of blood to circulate through the diseased organ, and as a result causing a much improved functional activity.

In a recent article in the *Journal of the American Medical Association*, Edebohls stated: "I have never found in any of my operations for chronic Bright's disease the capsule tightly stretched and compressing the kidney; generally it fits the kidney loosely and sometimes the kidney even appears to be somewhat shriveled or contracted within the loosely fitting capsule."

Even in far advanced chronic Bright's disease with greatly thickened capsule, the reduction in size of the kidney appears to be due rather to contraction of the new fibrous interstitial tissue of the kidney itself than to compression of the capsule.

It is a well established fact that a new capsule is formed after decapsulation. In some cases it is thinner than the original, but in many it is thicker. We have only to read the observations of Van Cott and Murray, Johnson and many others, and indeed, Edebohls himself, who has in many cases decapsulated twice and in one instance three times the same kidney, to find proof of these statements. If then, we find there is no compression of the kidney tissue from the capsule, and that another one perhaps thicker than the original will form, wherein lies the rationale of decapsulation?

Dr. A. J. Ochsner says in the *Annals of Surgery*,

1904: "We must look upon cases of nephritis as forming two distinct classes which have nothing to do with each other, so far as the disease itself is concerned, with the exception of certain symptoms. In one case we have the healthy kidneys, one of which has been injured mechanically, and this injury having been corrected by fixation and decapsulation, the kidney itself contained the elements which were necessary for its recovery." He is of the opinion that mechanical injury causing signs of nephritis in these cases, was the obstruction to the flow of blood into the kidney, which was immediately relieved when the displacement was corrected, thereby causing a disappearance of the symptoms. In the other class, with systemic causes, the conditions were entirely different. In these cases tension upon the substance of the kidney was due to the edematous state of the tissues, and after relieving the tension by decapsulation it was easy to see how such a kidney would resume its function to a certain degree.

Pel, Jabulay and others, are of the opinion that the good results claimed for decapsulation are due, not to fixation or decapsulation, but to the reaction upon the sympathetic ganglion caused by the mauling of the kidney. This is a thought not to be lost sight of, when we consider that the nerve supply of the kidney, though small, is very extensive, coming as it does from the renal plexus, which is formed by branches from the solar plexus, the lower and outer part of the semi-lunar ganglion and aortic plexuses and the lesser splanchnic nerve. We have still another theory of the favorable influence upon Bright's disease by decapsulation and fixation as advocated by Dr. Josef Saphonger, of Bregenz; he attributes the good results in a measure to his operation in which he makes a flap in the quadratus lumborum muscle anchoring the kidney to it and then covering it over with the internal oblique. He claims for this method that it maintains a continuous massage of the kidney.

Now let us consider the theory that a new vascular connection is formed between the kidney and the surrounding tissues. We have the experiments of Muller, Reis, Johnson, Wetzel and others, who have found that new vascular connections between the kidneys and the surrounding tissues are not established. Reis has had 600 carefully conducted microscopic examinations made of the kidneys after decapsulation and in but one solitary instance did he find any anastomosis, and that in a band of cicatricial tissue. Those who have practiced decapsulation of the kidney know how little hemorrhage occurs, and know also that adhesions between the peri-

renal fat and the capsule of the kidney may be severed with almost no loss of blood.

Let us consider for a moment, what is Bright's disease? We know that the beginning of all cases of Bright's disease is not in the tissues of the kidney proper, but in the bloodvessels. The glomeruli are lined with epithelium in which the watery portion of the urine is extracted from the blood, and in the convoluted tubules the solids are extracted. The afferent vessel leads into the glomerulus and it is here we find the beginning of the disease. Primarily there is a gradual diminution of the blood supply, owing to a sclerosis of the vessels, and if the sclerosis be progressive, complete arrest of the blood supply of the functioning portion of the kidney occurs, which eventually ends in death. The first condition which presents itself is the degeneration of the cellular elements of the organ and next the over-production of connective tissue.

It seems to me that since the composition of the blood is in no way discoverably changed, it is improbable that protracted relief can be effected by renal decapsulation, since the persistence of the toxic elements in the blood must continue to damage the kidney tissue, even though one may be able to accomplish an anastomosis.

My own experience with the surgical treatment of chronic Bright's disease is in accord with the views I have stated. Since being asked to present this paper, I have made inquiries at all the leading hospitals of this city comprehending the views entertained on the surgical treatment of chronic Bright's disease. I was informed, in all but one instance, that the physicians questioned did not take a favorable view of the surgical treatment of this affliction. They thought a case that would respond to surgical intervention would also be amenable to properly directed medical treatment.

I do not mean to imply that there are no cases of nephritis in which surgical interference is justifiable, where medical treatment has failed. In any case in which we have reason to believe that the toxic element in the blood is a transient ingredient, such as uremia, anuria, occurring in acute nephritis, scarlatinal nephritis and others, I firmly believe that after medical aid has failed, surgical attack should be made. These cases are not benefited by decapsulation, however, but by a nephrotomy, which lays open the kidney, provoking excessive bleeding and thereby giving an avenue of escape to the toxic substance which has overwhelmed the patient.

I have in mind relative to this belief, two cases—one of uremia following a normal delivery, where there was complete anuria. After medicinal treat-

ment had proven ineffectual, I was asked to see her. I told the physician in charge that I thought cutting down upon the kidney might be of service, if he would take the chance of failure. With his consent the operation was performed without anesthesia, the patient being in coma; the kidneys were split from pole to pole, causing thereby a great deal of bleeding; they were sewn loosely with catgut, a drain was placed in both and the patient was put back to bed. She was stimulated with nitroglycerine in large doses and, after a struggle lasting four hours, the odor of urine was found upon the drain from the right kidney, the left showing no signs of urine until three hours later. After a very trying experience she finally left the hospital with her urine almost normal.

The second case, that of a male adult, was one of complete anuria following a burn; after admission to the hospital he was catheterized and twelve ounces of urine were drawn from the bladder. No urine was voided after that, and twelve hours later, when a catheter was inserted no urine was found in the bladder. He was operated upon that day—the operation consisting in splitting the kidneys and treating them as above described, except that no drainage was employed. Eight hours after the operation, six ounces of urine were found in his bladder; he died two hours later, thereby depriving us of an opportunity for further observation.

Another case that I have in mind is that of a man brought to the hospital after having been struck by a trolley car, in the region of his left kidney. A diagnosis of ruptured kidney was made the next day. On section the left kidney and ureter were found torn; the kidney was of the large white variety. I was undecided whether to remove it or not. It seemed fair to assume that the other kidney was also diseased, and so I decided to leave it in after repairing it with sutures. The patient made an uneventful recovery. At a later date he told me he had been refused a life insurance policy on account of having albumin in his urine. When I last saw him the urine had cleared up entirely and he has since been accepted as a risk by a large insurance company. I am forced to attribute the improvement to the effect of the accident, which was practically a nephrotomy.

I do not think that any surgical treatment can do good in chronic Bright's disease, but as I have said before, in cases of uremia, anuria, or any acute attack of poisoning consequent to arrest of kidney function, we can help by surgical interference, to be used only after medical aid has failed.

If surgery is to be employed nephrotomy is the

operation of choice. I think this is the opinion of most of the surgeons in this and other cities to-day.

It is my belief that decapsulation of the kidney in chronic Bright's disease is far from being a logical procedure.

224 WEST 79TH STREET.

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NEW METHODS OF TESTING THE INTERNAL EAR, ESPECIALLY THE FUNCTION- ATING CONDITION OF THE SEMICIR- CULAR CANAL SYSTEM; ALSO SOME DIFFERENTIAL DIAGNOS- TIC SIGNS OF CEREBELLAR ABSCESS AND TUMOR.*

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The experiments of Ewald on the semicircular canals of pigeons have paved the way to our present knowledge of the functions of the semicircular canal system. Since then many observers have devoted their attention to the development of practical tests for determining whether this system is in a physiological or pathological condition. The evolution of the tests to be described is mainly due to the researches of Barony, Neumann, Bondy and Alexander of the Vienna Clinic, (which clinic I had the pleasure of visiting last summer).

These tests are dependent upon the fact that stimulation of the semicircular canals produces *nystagmus*. The nystagmus so produced is called *vestibular nystagmus*, and it has two distinguishing features from other nystagmus. These are

(a) The movement of the eyeballs has a slow and a quick component, that is they move either quickly to the right and slowly back, or quickly to the left and slowly back. The direction of the quick component determines the name of the nystagmus, *i. e.*, a quick movement to the right and slowly back is called *nystagmus to the right*, and vice versa.

(b) The nystagmus is always increased on looking in the direction of the quick component, and diminished or stopped on looking in the direction of the slow component.

The stimulation of the semicircular canals is produced in one of three ways:

(1) By placing the patient on a revolving chair and turning him ten times either to the right or to the left.

(2) By syringing a slow stream of hot or cold water into the ear.

(3) By making compression or rarefaction of the air in the external auditory canal.

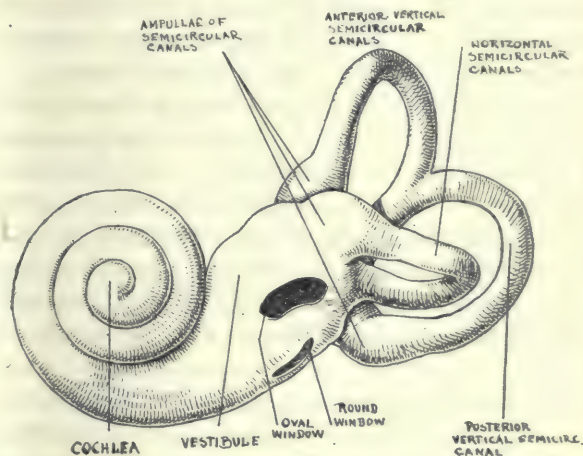


Figure 1. The Complete Bone Structure of the Internal Ear.

If we briefly review the anatomy of the internal ear we find that it is composed of three intercommunicating bone cavities (see Figure 1 and 2), the cochlea lying anteriorly, the semicircular canals lying posteriorly, and between the two, the vestibule. The middle ear communicates directly with the vestibule through the oval window in which window is situated the foot-plate of the stapes.

The three bone cavities have obtained within them a membranous sac (see Fig. 3), which is a smaller reproduction of the bony cavities. Within the membranous sac is a fluid known as the endolymph and outside the sac, between it and the bony walls, is a fluid known as the perilymph. Within the portion of the membranous sac contained in the cochlea are the end organs of the nerve of the special sense of hearing, *i. e.*, the *cochlear portion* of the auditory nerve. Within the portion of sac con-

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tained in the vestibule and semicircular canals are the end organs of the *vestibular portion* of the auditory nerve.

If we trace the origin of the eighth or auditory nerve we find that it arises from three roots situated in the medulla, that in reality it consists of two nerves. One, the *cochlear portion*, arises from the accessory nucleus and goes to the cochlea. This is the nerve of the special sense of hearing. The other, the *vestibular portion* arises from the chief nucleus and Deiter's nucleus and goes to the vestibule and semicircular canals. Its end organs are distributed as hair cells in the utricle and saccule of the vestibule and in the ampullæ of the semicircular canals. They are arranged as follows: In the utricle the hair cells project into a jelly-like mass which contains crystals of oxalate of lime called otoliths. In the saccule the hair cells also project into the same sort of a gelatinous mass, but placed at a right angle to that in the utricle as the head moves in various directions, these gelatinous masses pull in the hair cells and produce a stimulation by which we know our position in space.

The semicircular canals are three in number, two vertical and one horizontal. They are better named in German the anterior vertical (our superior), posterior vertical (our posterior) and the horizontal. Each canal has one dilated extremity known as the ampulla. Within the ampullæ, the end organs of the vestibular nerve are distributed as hair cells upon which rests a homogeneous mass known as the cupulla.

The central portion of the vestibular nerve, *i. e.*, Deiter's nucleus, radiates fibers to the nucleus of the motor nerves of the muscles of the eye on both sides and to the motor neurones of the spinal cord on both sides. Through the former, nystagmus is brought about and through the latter disturbance in gait.

Ewald, in experimenting on pigeons, proved that a movement of the endolymph toward the ampulla of the right horizontal canal causes horizontal nystagmus to the right and a movement away from the ampulla caused horizontal nystagmus to the left. So, the movement of the fluid in the semicircular masses in the ampullæ excites a stimulus which passes via the vestibular ganglion and vestibular nerve to Deiter's nucleus and from there is transmitted to the eye muscle nuclei and to the motor neurones of the spinal cord.

Methods of Producing Nystagmus.—As already stated one method of stimulating the semicircular canals is by turning the patient on a revolving chair.

The patient is placed in a revolving chair with an upright bar at the back to facilitate turning. He is then turned either to the right or to the left, that is, to the direction of right about face or left about face, ten times (in about 20 seconds). Smoked glasses are worn during the turning to prevent the patient from fixing his gaze upon any object. This tests the horizontal semicircular canals because the fluid contained in them is the only fluid parallel with the plane of the floor. If they are normal, we should get, after ten turnings, a nystagmus lasting at least twenty seconds. If the patient is turned to the right he should have a nystagmus to the left lasting at least twenty seconds, and this tests the left horizontal semicircular canal. If turned to the left we test the right horizontal semicircular canal in the same manner.

The explanation of this phenomenon is as fol-

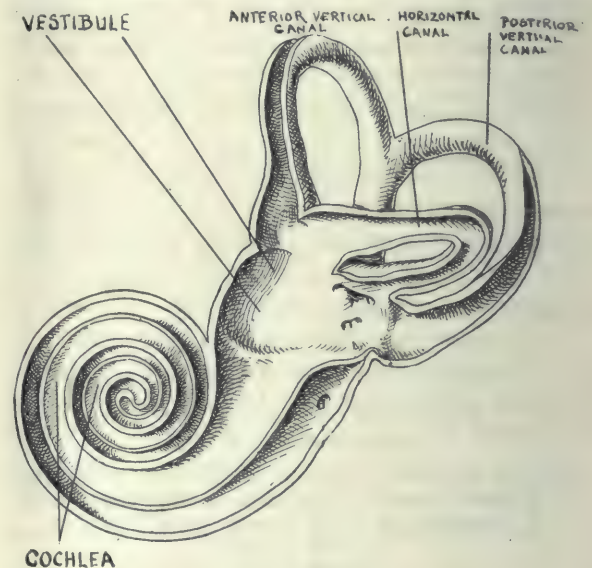


Figure 2. Section Through Figure 1.

lows: If we remember that the ampullæ of the horizontal semicircular canals lie externally and the convexity of the canals internally we can understand that when a patient is turned to the right the fluid in the right horizontal canal is forced toward the ampulla and in the left canal it is forced away from the ampulla, *i. e.*, toward the convexity. This motion of the endolymph produces normally a nystagmus to the right *during turning*. As soon as the turning is stopped, however, the motion of the fluid is reversed and the endolymph now moves away from the ampulla in the right horizontal canal and toward the ampulla in the left horizontal canal. This produces normally (remembering Ewald's experiment) a nystagmus to the left, which should last at least twenty seconds.

If the nystagmus lasts less than twenty seconds

it shows a diseased condition of the left horizontal canal. By rotating to the left the right horizontal canal is tested in the same manner. By inclining the head forward 90° we bring the anterior vertical canal on a plane parallel with the floor and on turning the patient in this position we induce a rotatory nystagmus. By bending the head backward 90° we bring the posterior vertical canal on a plane parallel with the floor and on turning in this position we induce a rotatory nystagmus and in this manner we test the vertical canals. The rule of *after nystagmus* is that it is to the side opposite to that toward which the patient is turned.

The Caloric Test.—It has been found that if a small steady stream of cold water is injected into the right ear, for instance, we should normally get a horizontal and rotatory nystagmus to the opposite, that is, to the left side. If we syringe warm water

there exists a fistulous opening of the bony labyrinth from caries or necrosis of bone extending to and not involving the membranous semicircular canal we can readily understand that if air pressure is made along the tract we make pressure directly on the membranous portion of the semicircular canal involved and consequently a disturbance of the contained endolymph resulting in nystagmus. So, if on pressure of the air in the external canal we provoke well marked nystagmus we may diagnose a fistula leading to the membranous semicircular canal. The combination which most definitely establishes the presence of a fistula is an absence of reaction to the caloric test and a positive reaction to the air pressure test. The direction of the nystagmus produced by this test is variable, but is most often toward the affected side.

Intracranial Involvement of the Vestibular Nerve.

—Pressure on the vestibular nerve or nucleus within the cranium produces nystagmus to the side involved. If, for instance, we have to deal with a chronic suppuration of the right ear, which gives no reaction to the tests, while the left ear responds normally, and there is present a spontaneous nystagmus to the right, we infer an intracranial lesion, either post-basilar meningitis or cerebellar abscess. Because spontaneous nystagmus to the right is due to irritation of the right vestibular nerve and the irritability of the semicircular canals being gone, the lesion must be intracranial. A further differentiation lies in the fact that the nystagmus produced by pathological irritation in the semicircular canals, lessens in intensity as time goes on, whereas if the irritation is intracranial the nystagmus continues to increase. If the middle ear is normal and we have an absence of reaction to the tests, with spontaneous nystagmus to that side we can diagnose a tumor causing pressure on the vestibular nerve or nucleus.

157 WEST 73RD STREET.

URO-GENITAL TUBERCULOSIS. A PLEA FOR EARLY DIAGNOSIS AND CONSERVATIVE TREATMENT.*

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My reason for selecting this subject is that I believe that many physicians fail to recognize certain tuberculous conditions until it is too late to expect any favorable results from treatment, also

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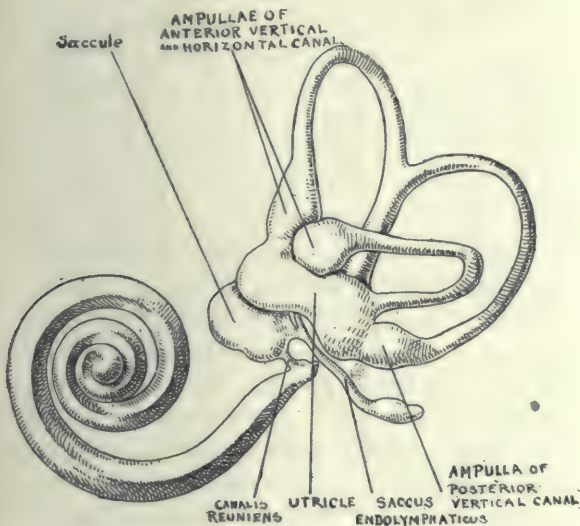


Figure 3. Membranous Structure of the Internal Ear.

(above body temperature) we should normally get a rotatory nystagmus to the same side, *i. e.*, the right side.

The explanation of this phenomenon is that the labyrinthine endolymph is likened to a bowl containing fluid at a temperature of 98.6° F. If a stream of cold water is played on the outside of the bowl there will be a cooling at first of the outer layer of contained fluid and this will fall, thereby a circulation is set up which in turn stimulates the hair cells at the ampulla and consequently induces the nystagmus. These results take place whether the tympanic membrane is intact or not.

This test determines absolutely the presence or absence of a functioning vestibular apparatus.

Test by Compression or Rarefaction of Air in the External Auditory Canal. (Fistula test.)—If

that too many surgeons are ultraradical in their treatment of the disease when it affects the genito-urinary organs.

It is impossible in the time allowed to do anything like justice to this vast subject and I shall only touch briefly upon tuberculosis of the kidney, bladder and epididymis.

TUBERCULOSIS OF THE KIDNEY.—Renal tuberculosis is a disease of youth, though it is at times observed in later life. Israel¹ states that eighty per cent. of his operations were performed upon people between the ages of twenty and forty.

French and German authors believe that women present twice as many cases of renal tuberculosis as men, but this is disputed by certain English and American writers.

Pathogenesis.—The tubercle bacillus reaches the kidney by direct extension, through the lymphatics or the blood current. Most commonly infection occurs through the blood. There can be no reason to discuss the question of ascending and descending infection, as it is pretty generally agreed to-day, that while ascending infection may, and sometimes does occur, the disease usually begins in the kidney and descends to the bladder.

Varieties.—Of the several forms of the disease that may affect the kidney, the usual form of surgical tuberculosis is caseous. The process usually begins in the end of one kidney. The organ when removed, shows tuberculous nodules in various stages, some broken down and coalescing with others to form large cavities. In advanced cases the entire kidney may be destroyed.

Diagnosis.—Frequent urination, usually somewhat painful, is the first symptom of renal tuberculosis. This symptom is too often attributed to some simple form of cystitis and is treated as such for a shorter or longer period. In this way valuable time is lost and the process in the kidney spreads, with the result that in many cases treatment is of no avail when the correct diagnosis is finally made.

There is a distinct difference in the frequency of urination in tuberculosis and stone in the bladder. In stone this symptom practically ceases at night when the patient is in the recumbent position, while in tuberculosis the bladder is usually emptied several times during the night.

As in all forms of tuberculosis, periods of temporary improvement, particularly in this prominent symptom, may delude the patient and his physician into the idea that some real improvement has taken place.

Pain may occur during urination or at its termination if the neck of the bladder is ulcerated.

The urine is usually somewhat increased in quantity, the specific gravity is low, and pus is present in varying quantity.

Blood in the urine occurs in some cases but I have not found it a very constant symptom, certainly not as constant as some writers would have us believe.

When the process has advanced the urine contains albumin and various casts.

A certain amount of dull pain in the loin is usually present, but is not especially characteristic. An appreciable tumor rarely occurs except in the advanced stage of the disease or from an associated pyelo-nephritis.

Some writers consider that the average case is of the typical tuberculous type, commonly having some other tuberculous process in the lungs, bladder, epididymis or lymphatics, with perhaps a history of the disease in the family, progressive loss of weight and some afternoon rise of temperature. While this picture is undoubtedly true of the average advanced case, there are many cases of renal tuberculosis with involvement of the bladder that in the earlier period of the disease present no symptoms except of an apparently simple cystitis, and as tuberculosis of the kidney may occur in an individual without a history of the disease in his family, the diagnosis is frequently quite difficult, and the practitioner is satisfied to consider the condition cystitis unqualified, and treat it by irrigations and some internal urinary antiseptic.

After much valuable time has been lost, perhaps even a number of months, and the patient has improved at times, these periods having been followed by marked aggravation of the symptoms, the physician finally concludes that the condition may be something more serious than he had considered it. If he has had some experience with that much abused instrument, the cystoscope, he will consider examining the patient's bladder, and perhaps catheterizing his ureters. This procedure, not easy at any time, in the advanced stage of the disease presents peculiar difficulties. When the attempt is made to sufficiently dilate the bladder with some clear solution it will be found to have become so contracted that perhaps less than fifty cubic centimeters can be retained and this the patient finds exceedingly distressing.

If, however, a sufficient quantity of the solution can be retained (from 75 to 150 c.c.), when the attempt is made to introduce the instrument, if the bladder is ulcerated at or near the internal meatus, as it usually is, the beak of the instrument produces violent and unbearable pain, and cannot be introduced into the bladder. If cystoscopy be attempted

in these cases, under general anesthesia, great care must be exercised in dilating the bladder. Usually after the cystoscope has been introduced into the bladder the solution will flow out beside the instrument and examination of the bladder and catheterization of the ureters will be impossible.

It being impossible to proceed with cystoscopy in such cases, what is left to help us as to diagnosis and treatment? The tubercle bacillus may be found in the urine, but frequently it cannot be discovered even in fairly well advanced cases. Guinea-pig inoculation is usually a positive and conclusive test, but I have seen this fail in two cases that were later demonstrated to be tuberculous. The x-ray has been of little value in this disease and I have never resorted to it.

In this type of case nothing can be done to determine the condition of each kidney, and operation can rarely be considered, unless, as Morris² has suggested, we cut down on both kidneys before removing the one supposed to be affected.

Operation.—During the past winter at one of the societies of Brooklyn, a paper was read upon tuberculosis of the kidney, in which the writer stated that if these cases were seen early, kidney removal usually resulted in a cure. In the discussion that followed I took exception to this statement, and I wish to do so again now. It suggests that the diagnosis is a comparatively simple matter and that operation is always indicated.

While we know that one sound kidney is sufficient for the purposes of excretion we do not know that a particular kidney will surely carry on this function when robbed of its mate. A slight nephritis in the more normal kidney may be whipped into activity from the effects of the anesthetic and the extra strain put upon it following the removal of the tuberculous organ.

As Keyes³ very aptly states, "We are now on the crest of a wave of operative success in the treatment of renal tuberculosis," and the surgeon's first thought will be to remove the diseased kidney.

Those men who favor surgical interference in selected cases, insist upon the early removal of the kidney in practically all cases. This would appear to be good surgery, and often proves to be, but however carefully we may examine the patient we can never be sure that the other kidney or some other organ is not the seat of an active tuberculous process that our surgical meddling will arouse into activity.

While the most conservative writers admit that even an involvement of the lungs is not a positive contraindication to nephrectomy, there must always

be an element of doubt and uncertainty as to what we may really call a selected case.

In a beginning tuberculous nephritis there is every reason to believe that good hygiene and general tonic treatment will accomplish as much in other tuberculous conditions.

I would therefore urge that these cases be sent to a suitable climate, induced to rest and live out of doors and, if possible, be placed in the care of a physician of experience in other tuberculous conditions. If, after a reasonable period, they continue to lose weight, and their symptoms increase, or are unimproved, then and only then remove the kidney.

In the examination of the urine I have had very great help from Dr. Louis Heitzman, who made the positive diagnosis of tuberculous kidney in one case, where no tubercle bacilli could be found in the urine and when guinea-pig inoculation failed.

In regard to the various tests of the functional activity of the two kidneys, I have had no experience, relying alone upon the ordinary examination.

TUBERCULOSIS OF THE BLADDER.—As this is usually secondary to tuberculosis of the kidney, little need be said about it. Successful operation upon the kidney usually cures the associated cystitis, as does improvement or cure after proper hygienic measures.

Garrett,⁴ of Buffalo, reports three cases cured by the Roentgen ray. He says nothing about the kidneys in any of these cases and the rays were applied only to the bladder.

It is generally admitted that tonic treatment has no effect upon these cases.

TUBERCULOUS EPIDIDYMITIS.—Until comparatively recently it was the custom of most surgeons to remove tuberculous testicles as a routine procedure even when the epididymis was the only portion involved, and many general surgeons still insist upon this radical operation. Conservative genito-urinary men have come to believe that more uniformly good results are obtained by removing the epididymis only.

There are several reasons why this latter is the more reasonable operation. In practically all cases careful palpation of the prostate gland and seminal vesicle will demonstrate nodules in these organs, so that complete removal of the testicle will not mean the removal of all tuberculous deposits. The reaction following complete removal is much greater than when the epididymis alone is removed, and the mental depression in many of these run down, nervous individuals has also to be considered and, if possible, avoided. The decided reaction that follows the removal of the epididymis is quite enough

for the patient to combat without the added mental strain that follows complete removal of the whole gland.

Results.—Epididymectomy, followed by outdoor life and a general upbuilding of the patient's health, has been found to effect a cure in a greater number of cases than when the more radical procedure has been resorted to. Of course, when the body of the testicle is nodular or perforated by sinuses the complete removal is indicated, but this condition is the exception when the patient is seen early in the disease and even when suppuration has occurred in the epididymis.

11 EAST 48TH STREET.

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DILATATION OF THE FEMALE URETHRA.*

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Dilatation of the female urethra, with its most important symptom, incontinence of urine, is said by many text-books authors to be a rare condition; and their advice in the matter of treatment is so indefinite that one's ideas as to the best methods to be followed must be extremely vague, unless experience has proven to him the value of certain of the procedures that have been described. The frequency with which these cases have come to the notice of the writer in the course of a general surgical practice has caused him to wonder at the scant attention paid to the subject by many of those who have written largely on the genito-urinary diseases of the female, and especially surprising is the lack of positive opinion as to the best methods of treatment. Dudley is an exception to the general rule and in the chapter of his *Gynecology* treating of "Incontinence of urine in women," he says: "The condition will be recognized as one of frequent occurrence, great embarrassment to the patient, and difficult of cure."

The enlargement of the lumen of the urethra is due to some injury to its circular fibers. It may be caused by some trauma from without, such as pressure of the child's head during labor, or it may be caused by the forcing of some foreign body in

either direction through the urethral canal. The examining finger, which was formerly a rather frequent cause of this condition, has fortunately now almost ceased to be so. The newer methods of urethral and cystic examinations have rendered this crude method unnecessary and unjustifiable unless the urethra has already been dilated by some other agent to such an unusual degree as to admit the finger without resistance. Dragging a large calculus through the urethra is another way in which dilatation has been produced, but such a misfortune will rarely happen in the future as very few cases of stone in the bladder will be treated in so barbarous a fashion. Coitus per urethram in women suffering from atresia of the vagina is followed by extreme dilatation and several such cases have been reported. Kelly says that the degree of incontinence of urine in these cases is often surprisingly slight and that some of the women can retain their urine for several hours, or at the most they notice a decided incontinence following coitus only. Two cases of urinary incontinence have come under my observation which were apparently due to the presence of urethral caruncles situated just within the meatus. Whether the caruncles by their position within the urethra brought about sufficient dilatation to cause incontinence it is difficult to say, but certain it is that their removal effected a prompt cure. It is very unusual for caruncles to display this symptom; in fact it is not mentioned in the literature at all, so far as I have been able to learn.

By far the greatest number of cases of incontinence from dilatation are due to injuries incurred during childbirth. Not only are the circular fibers injured, but there is a sagging of the urethra as well, because it has been torn loose from the pubes. As a rule the trouble develops in women who have borne a number of children, and first shows itself at a time when they are approaching the menopause; but it is sometimes seen in young women and may follow their first delivery. It is usually persistent and nearly always progressive, but the partial incontinence from this cause seldom becomes complete. The patient first notices a spurt of urine on any sudden exertion, such as sneezing, coughing, laughing or jumping. Later on the dribbling may occur nearly all the time that she is on her feet, and then, of course, it becomes impossible to keep the clothing dry. Some patients complain of frequent "colds" as a result of this constant wetting, especially during the winter, and one of my own patients suffered from repeated attacks of bronchitis during the cold months. Relief of the incontinence proved to be also a cure for the bronchial trouble.

* Read before the Medical Society of the County of Kings, May 18, 1909.

Many a procedure for the cure of urethral dilatation have been tried with more or less success, but so great an authority as Kelly says that his experience has not been sufficiently large to speak with decision as to their merits,—a statement that is surprising to one who not infrequently sees these cases in the course of a general surgical practice. Dudley, however, does not regard the condition as at all rare, and he is quite positive as to the proper methods to pursue in an attempt at a cure. My own results in the treatment of these cases has been so uniformly good that I no longer undertake their care with the reluctance that most of the writings would induce, and therefore I feel justified in calling attention here to a condition that is probably as old as mankind, and which has been the cause of so much misery to child-bearing women of all classes that one eminent authority has gone to the extent of proposing a cure by completely closing the urethra and making a suprapubic fistula.

A vaginal pessary of such shape and size as to press against the urethra will sometimes control the dribbling, but it will not act if there is much relaxation of the vaginal outlet, and since this condition of relaxation is nearly always present a pessary will not often be applicable.

Injection of paraffin around the urethra has been advised, but this is seldom effective and paraffin injections have proven dangerous to life.

Massage and electricity have occasionally given results that were temporarily good, but almost never permanent.

Torsion of the urethra after its free dissection from the surrounding structures was devised by Gersuny as a method of treatment. The theoretical objection which has been raised to this operation is the danger of sloughing of the urethra. Whether such a disastrous result has ever been obtained I am unable to learn.

Hummelfarb sought to make a new meatus at a higher level than the old by joining the labia minora together, thus lengthening the urethra the distance between the meatus and the clitoris. This seems like an operation difficult of accomplishment and doubtful of results.

Alberran recommends dissecting the urethra free and bringing the meatus forward to the clitoris, after making two flaps in the mucosa to cover over the urethra in its new position. This operation has at least the theoretical objection of endangering the integrity of the urethra.

Dudley has improved upon an operation devised by Pawlik. He denudes a horseshoe-shaped area

between the meatus and the clitoris, extending back on either side of the urethra. He then drags the meatus and urethra forward toward the clitoris by means of sutures and sews up the gaps on either side of the urethra. This procedure straightens out the sagging urethra and at the same time flattens its lumen. Dudley often finds it necessary to do a further operation for the cure of a cystocele which is very likely to be present in these cases. He claims excellent results from his work, and it seems reasonable to suppose that the operation would accomplish its purpose.

The operation that seems to me most commendable is simple and easy of performance; it is an old and well-known procedure; but it is not known who devised it. A longitudinal resection of the vaginal wall over the full length of the urethra is made. It seems a rational procedure to carry this resection close to the meatus and I have made it a rule to do so. A piece of the urethra has been excised by some operators, but I have never found this addition to the operation necessary. Before closing the incision some buried sutures should be inserted. These are passed widely and deeply on either side of the urethra and tied with considerable tension in order to compress the urethra. I believe this suturing to be an important step in the operation. The resected vagina is finally sutured, and a relaxed perineum should be repaired, of course. This operation corrects a coexisting cystocele at the same time that the urethral deformity is repaired, and it is, therefore, complete in itself. Careful attention to all of its details is undoubtedly necessary to a successful outcome, but this is true of nearly all surgical work. Should this operation fail of its purpose one would still have that of Dudley or that of Gersuny to fall back upon; not once, however, have I been compelled to do anything further for any of my cases, though some of them have been extremely bad ones.

My experience leads me to believe that there has been too pessimistic a view taken of the outlook of the unhappy women who suffer from this form of urinary incontinence, and that most of them should be offered the very probable relief of a simple and safe operation.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, OCTOBER, 1909.

TRANSVERSE OPENING OF THE ABDOMEN BEHIND THE RECTUS MUSCLE.

It was not until the surgical treatment of abdominal diseases had become well advanced that serious attention was given to the abdominal incision. Indeed, this was not given its due consideration until the prevalence of post-operative ventral hernia forced its attention upon surgeons. It was but a few years ago that surgeons divided the oblique muscles and the transversalis with disregard for their subsequent integrity. The old median incision through the linea alba was made through the weakest part of the abdominal wall. The surgeon sought for the thinnest place and found it there.

Ventral herniae taught surgeons their lesson. Now the endeavor is to preserve the tissues as much as possible and to make the abdominal opening through strong structures that can be firmly closed. The objections to scar tissue in the abdominal wall are well appreciated; its poor vitality and yielding tendency are understood, and every effort is made to reduce its formation to a minimum.

In recent times entrance into the abdomen has been made through the separating or blunt splitting of muscles. In this operation, precaution is now taken to preserve the nerves and to impose undamaged muscle over or under the openings through the fascia. Every surgeon has his own peculiar method of gaining access to the various regions of the abdomen, always with a view to restoring the abdominal wall to its original state of strength.

A method which a number of surgeons are now using, and which possesses merits that should make its employment more widely adopted, is the approach to the abdomen not through any muscle, but behind the rectus, splitting transversely its posterior leaf of fascia. The rectus is large, easily retractable from one side to the other, and, without dividing either its nerves or vessels, permits access to the abdomen through its sheath. A transverse, oblique or longitudinal skin incision is made; the anterior sheath of the rectus is opened transversely or longitudinally; the rectus is retracted inwards or outwards, as is desired; and the posterior sheath and peritoneum are divided transversely. This operation gives access to the mid-abdomen and to the medio-lateral parts. Appendix vermiformis, uterus, tubes and ovaries, intestine, stomach, and gall-bladder are all reached through this incision. If necessary to continue the incision further outwards, it runs naturally in the direction of the conjoined fibers of the lateral muscles. Also, if necessary, a double operation can be done, and the two recti retracted outwards.

This operation has been recently recommended highly by Winkelmann (*Deutsche Zeitschrift für Chirurgie*, April, 1907), who apparently is not aware that it has been practiced for several years by American surgeons.—J. P. W.

FREE TRANSPLANTATION OF BONES AND JOINTS.

Although the work of Lexer in transplanting whole joints into defects made by resection of diseased joints came with startling suddenness, it is, nevertheless, the logical outgrowth of a series of studies extending over several years.

Originally, attempts were made to implant decalcified bare bone from lower mammals into man, and though the method frequently failed, there were some successes. Similar results were obtained by grafting decalcified bone from human beings. Later, fresh bone, bared of its periosteum, was employed to fill in bone defects, to act as a bolt between two fragments of bone, etc. This technic was attended by a far greater number of successes. Yet failures were frequent enough until it was gradually realized that periosteum is an important factor in bone grafts. It was observed that when periosteum alone was transplanted it often gave rise to a luxuriant growth of new-formed bone; from this it was but a step to transplant bone with its periosteum intact, and this method has undoubtedly given the best results. First small fragments of bone-periosteum were transplanted and later, the surgeons and ex-

perimenters, emboldened by their successes, larger fragments were employed until, at the present time, as much of a gap as half the length of the humerus has been successfully filled in by a piece of bone-periosteum. It is as yet unsettled whether transplanted bone dies or remains alive from the beginning; Marchand and his school supporting the former view, Axhausen and others vigorously opposing it. But the important practical fact remains that, under favorable conditions, the transplant heals *in situ* and in time functionates like normal bone.

The more recent stages in the evolution of the transplantation idea were the discoveries that such bloodless tissues as tendons, articular cartilages, synovial membranes, ligamentous bands could be successfully grafted. Thereupon bones with their articular cartilages, then bones with their cartilages and synovial sheaths, and finally intact joints with cartilages, synovia, and ligaments were successfully transplanted from one animal to the other. (Judet.)

Lexer's work is the culmination of this long series of experimental efforts. On page 348 of this number of the AMERICAN JOURNAL OF SURGERY is abstracted a recent paper of his in which he lays down some general rules for the methods of transplantation of joints. It must not be concluded that he has had numerous successes and no failures. On the contrary, his cases have been few and his successes much fewer—his best result was attained in the implantation in one-half a joint.

The work is in its infancy, and methods must be greatly improved to be of real practical value. But improvements will come in time and we shall unquestionably witness, in a few decades, one of the greatest triumphs of modern surgery—the replacement of diseased and useless joints by normal ones.—H. N.

TUMORS OF THE SPINAL COLUMN.

At a meeting of die Freie Vereinigung der Chirurgen, Berlin, March 8, 1909, Fedor Krause presented the histories of 28 cases of tumors of the spinal column and of the cord that produced paralysis by pressure or infiltration of nerve-roots or centers. Eight cases died as a direct result of operation; two at the end of the first week from pyelitis, one in six days, from a purulent meningitis, whose etiology was a bed-sore; the remainder of the cases died shortly after operation. Of the twenty operatively successful cases, Krause dwells most on the irremovable tumors. He bases some brilliant results he has had in the relief of paralysis on one technical procedure—he incises the dura. He insists that in every spinal cord operation, in the presence of paralysis the dura must be opened.

Surgical Suggestions.

Inflation of the colon should be practised in every case of an abdominal mass of doubtful nature.

Increase in pulse rate is of far greater significance than temperature elevation in most surgical conditions.

Blood cultures may be of very important diagnostic as well as prognostic value in cases of sepsis of unknown origin.

If the pylorus is not actually obstructed in ulcer or carcinoma of the stomach, gastroenterostomy is valueless and may be harmful.

Abscess of the lung should be borne in mind when pus is aspirated from the chest of a patient whose physical signs of empyema are atypical.

Unless a liver abscess bulges anteriorly, the safest and most logical route for drainage is the trans—or sub-plural one.

If a greatly thickened parietal peritoneum is found at an exploratory laparotomy one may confidently expect to find tuberculous peritonitis.

Watch for the development of subphrenic abscess when there is persistent pain in the lower chest and a dry cough several weeks after operation for appendicitis abscess.

Light percussion auscultation—the bell of the stethoscope stationary and the percussing finger tapping from point to point—will reveal a cracked-pot note in most cases of fracture of the cranial vault, and may be the only evidence of fracture.

The one lesson learned from the trypsin treatment of carcinoma is the beneficial effect of trypsin on many varieties of chronic ulcer. It may be employed, without danger, in the form of applications to the surface of the ulcer.

Feel for the gland (of Virchow) behind the clavicular insertion of the left sterno-mastoid in every case of suspected abdominal or thoracic neoplasm. It is not infrequently involved by carcinoma quite early, may be of great aid in diagnosis, and may be the single contraindication to a radical operation.

Book Reviews.

Constipation and Intestinal Obstruction. By SAMUEL

G. GANT, M.D., LL.D., Professor of Diseases of the Rectum and Anus in the New York Post-Graduate Medical School and Hospital, etc. Octavo; 559 pages; 250 original illustrations. Philadelphia and London: W. B. SAUNDERS COMPANY, 1909. Cloth, \$6.00, net; half morocco, \$7.50, net.

Constipation is the most common of human ailments and its mistreatment by cathartics—self-administered or prescribed by the physician—is almost as universal as is the disorder itself. This symptomatic treatment suggests itself largely by its simplicity, but, even more, by reason of ignorance of the cause of the constipation in individual cases and of the use of the curative procedures to which it is amenable.

This excellent work, dealing exhaustively, as it does, with constipation and obstipation, is therefore a most useful treatise. Following two well illustrated chapters relating, respectively, to *anatomy* and *physiology*, Gant enters into a description of the varieties of constipation, their causes, symptoms and consequences. He emphasizes the importance of determining what type of constipation exists (*e. g.*, habitual atonic, spastic, mechanical), and describes the means by which the diagnosis is to be established.

The succeeding chapters (14 to 25, inclusive) deal with general, educational, psychic and dietetic treatment, exercise and bodily movements, hydrotherapy (internal and external), massage, mechanical vibration, electricity and other physical therapeutic procedures. It is by these means—the proper administration of which he describes—that Gant treats chronic habitual constipation. Drugs he holds to be inefficient in these cases, except as occasional adjuvants or as last resorts in the few cases in which more rational measures fail. He concedes that “drugs properly administered accomplish a very great deal toward the relief and cure of *acute* and *spastic* constipation,” and for this reason, and because some patients cannot or will not submit to other treatment, he devotes chapters 26 and 27 to the medical treatment of constipation. In the first of these chapters are classified the various cathartics, and the selective action of, and indication for each are described. The next chapter is an extensive and well chosen formulary.

Chapters 28 to 31, inclusive, deal, respectively, with the treatment of the complications and consequences of constipation, of spastic constipation, of acute constipation, and of constipation in infants and children.

The rest of the book relates to the surgical treatment of mechanical constipation (obstipation) and its complications. It includes, among other operations described, intestinal resection and anastomosis, colostomy of various types, proctectomy, operation for congenital malformations, adhesions, angulations, diverticula, megacolon, splachnoptosis, for the various sigmoid and rectal obstructions, etc. While much of this will be found in general surgical works there are described several procedures that are original to the author (many of them familiar to the profession through Gant's contributions to journal literature). The final chapter (44) is devoted to a brief consideration of the treatment of rectal polyps, hemorrhoids, fissure in ano, ulceration and fistula in ano, in which again, Gant describes, especially, his own methods.

This work is altogether practical. It is devoid of theoretical considerations and free from discussions of moot physiological and chemical problems. It is well planned and well balanced. Typographically and because of the many excellent original drawings it is as attractive as it is interesting. The reviewer has read it through and learned much from it. He would make but one criticism, viz., that the author would have done well to more specifically indicate how he selects and combines the various therapeutic measures in individual cases.

A Practical Treatise on Rectal Diseases. Their Diagnosis and Treatment by Ambulant Methods. By JACOB DISSINGER ALBRIGHT, M.D. Octavo; 455 pages; 32 plates and 39 other illustrations. Philadelphia: PUBLISHED BY THE AUTHOR, 1909.

Dr. Albright is familiar to the profession as an “office practitioner,” and doubtless his experience in the ambulant treatment of rectal disorders has been large enough to qualify him to write knowingly on the subject. His book certainly indicates a wide familiarity with the literature balanced by a thorough personal trial of all methods.

The reviewer confesses that he approached this book in a skeptical spirit. He expected to find it a laudation of the greatness of “local anesthesia” and the “injection treatment”—the two shibboleths of those who profess to remove all rectal fistulae, fissures and hemorrhoids “without interference with business.” The book surprised him. He found it sober and interesting reading—and he learned much from it!

The work is striking in its originality, and satisfying in the painstaking statement of details of technic, after-treatment, etc. Clinical classifications are made very simple. Thus, fistulae are divided into two main groups, rectal and anal; and abscesses are classified in a manner to avoid all confusion. At considerable length Albright describes *chronic proctitis*, a disorder but little recognized, to which he ascribes the etiology of pruritus ani, fissure and hemorrhoids. In this, Albright adopts and elaborates the theory of A. B. Jamison of New York. Albright asserts that pruritus ani, when not due to other *discoverable* cause is produced by subtegumentary sinuses (containing mucous or sero-mucous) which, in turn, are the results of chronic proctitis (and periproctitis); and that the pruritus can be cured by locating, draining and treating these sometimes very extensive sinuses. The removal of hemorrhoids, or fissures, should be but a part of the treatment of the condition from which they arise—chronic proctitis. Albright's assertions concerning the pathology of this disease and its sequelae remain to be corroborated or disproven by others, but they are at least very suggestive. They attempt to account for various disorders whose etiology has not been satisfactorily explained otherwise. One cannot question the sincerity of the author's claims that he and Jamison have seen extensive submucous and subtegumentary sinuses filled with mucus, as a result of chronic proctitis. He presents skiagraphs of two cases showing the mucous reservoirs filled with bismuth.

Of hemorrhoids, the pathology, in part, and the pathogenesis, entirely, are described in an original fashion. The various palliative and radical (ambulant) methods for their treatment are detailed, and numerous formulæ for local applications are provided. Albright insists that the injection treatment of hemorrhoids is neither unscientific nor dangerous if it is properly executed in the proper cases. The selection of cases, their preparation, the technic of the injections, the precautions to be observed, and the after-treatment are all dwelt upon.

In all the other chapters, too, anesthetics, fissure and ulcer, fistula, etc., etc.—the author is equally precise. Indeed, his style throughout is interesting as well as clean—although occasionally marred by a grammatical lapse. In addition to various illustrations in the text, there are 31 plates—of which the majority are from wash drawings by A. Kneeder. Most of these are good. Plate 10, however, is anatomically bad, and in plates 16 and 17, illustrating Bishop's bloodless method of removing cutaneous tags, the sutures are improperly sketched.

Hand-Book of the Diseases of the Rectum. By LOUIS J. HIRSCHMAN, M.D., Detroit, Mich., Lecturer on Rectal Surgery and Clinical Professor of Proctology, Detroit College of Medicine; Attending Proctologist, Harper Hospital, etc. Octavo; 374 pages; 147 illustrations and 2 colored plates. St. Louis: C. V. MOSBY MEDICAL BOOK AND PUBLISHING COMPANY, 1909.

In this book the author has aimed to present a practical manual on those rectal diseases that may be treated in the office, a mode of management that has grown in favor and widened in applicability with the development

of the technics of local anesthesia for this region. These technics Hirschman describes in a separate chapter.

Another chapter, very commendably, is written on the limitations of office treatment and indications for other measures.

Symptomatology and physical signs are given due prominence. The chapter on examination of the patient contains useful suggestions on equipment and methods, but it is clumsily written. Concerning the treatment of hemorrhoids it is interesting to note that Hirschman believes that Whitehead's operation is seldom, if ever, indicated, and that the injection methods, which he briefly describes, are uncertain and unscientific,—in both of which opinions most general surgeons probably share.

Dr. John L. Jelks, of Memphis, contributed an interesting chapter on dysentery; and Dr. George W. Wagner, of Detroit, wrote the final chapter, devoted to a description of such examinations of the feces as are clinically practical.

The illustrations are from original photographs. They are all good, but are not always well arranged on the page.

We cannot refrain from criticising the awkwardness of expression, improper punctuation and generally "bad English" with which the author allowed his work to go to press. This does not, however, interfere with its usefulness as a practical handbook on the minor diseases of the rectum and anus and their ambulant treatment.

A System of Operative Surgery. By Various Authors. Edited by F. F. BURGHARD, M.S. (Lond.), F.R.C.S. (Eng.), Teacher of Operative Surgery in King's College, London; Surgeon to King's College Hospital; Senior Surgeon to the Children's Hospital, Paddington Green. In four volumes. Volume IV. Large octavo; 687 pages; 351 illustrations. London: OXFORD UNIVERSITY PRESS, 1909. Price, \$10 per volume.

This volume (which appears out of its turn, volumes two and three of the system not yet having been issued) is devoted to the operations of the surgical specialties—gynecology, ophthalmology, otology, rhinology and laryngology.

By reason, especially, of the weakness of the section on gynecological operations (which will chiefly interest general surgeons), Volume IV. disappoints the expectations we expressed in the more lengthy review of Volume I. (August issue). This section, *Operations Upon the Female Genital Organs*, is amazingly incomplete! It is incomprehensible that the authors and the editor should seriously offer these 173 pages in an elaborate and expensive "system" as representing modern gynecologic surgery.

The section is divided into two parts. Part 1, *abdominal gynecological operations*, is written by J. BLAND-SUTTON, surgeon to the Middlesex Hospital and to the Chelsea Hospital for Women; part 2, *vaginal gynecological operations*, is by JOHN PHILLIPS, obstetric physician and gynecologist to King's College Hospital. Of these two parts it is not easy to select the worse.

Except for two diagrams of sutures passing through the stump after abdominal hysterectomy and one diagram of the relation of parts after Ricard's operation of ureterocysto-neostomy, there is not a single illustration of any abdominal gynecologic operation; but there are several pictures of pathological specimens! Partial ovariectomy and ovarian transplantation are not discussed. The removal of cysts of the broad ligament occupies a half page. Technical details of all the major abdominal operations are too meagerly described.

In part 2, vaginal operations, perineorrhaphy occupies but seven pages, of which more than half the space is occupied by illustrations; to cystocele less than two pages is given, and but two operations are described—the time-worn procedure of Stoltz and the simple oval denudation and suture! Atresia of the vagina and of the hymen is briefly considered, but no operation is mentioned for absence of vagina, or for vaginal cyst. The technic of trachelorrhaphy fills about a page; the different types of operation are not considered. Antelexion is not mentioned and so, of course, there is no reference to Dudley's opera-

tion. Nor is there described any operation for retroflexion (except ventral suspension, in part 1). Perhaps it is one of the defects of multiple authorship that in the division of the field between two men each left Alexander's operation to the other. But worse still, there is not the slightest reference to inguinal, vaginal or abdominal shortening of the round ligaments!

In short, any of the accepted text-books of gynecology supplies more and better information on the operations of this branch of surgery than does this department of Burghard's pretentious system. Even the index to this section is bad!

Section II. (pages 177 to 301), *Ophthalmic Operations*, is written by M. S. MAYOU, assistant surgeon to the Central London Ophthalmic Hospital; Section III. (pages 305 to 471), *Operations Upon the Ear*, by HUNTER TOD, aural surgeon to the London Hospital; Section IV. (pages 475 to 566), *Operations Upon the Larynx and Trachea*, by W. DOUGLAS HARMER, surgeon to the throat and nose department, St. Bartholomew's Hospital; and Section V. (pages 569 to 672), *Operations Upon the Nose and Its Accessory Cavities*, by ST. CLAIR THOMPSON, professor of laryngology and physician for diseases of the throat, King's College Hospital, London. A survey of these sections shows them to be modern, fairly complete and carefully written. They are the more acceptable because in American works on operative surgery these specialties are usually not included in their entirety. Unfortunately, these four sections can hardly redeem a volume in which the remaining section (gynecology), which, to repeat, most interests the general surgeon, is such very poor stuff.

Second Congress of the International Society of Surgery (*Deuxième Congrès de la Société Internationale de Chirurgie*), held at Brussels, September 21-25, 1908. Published by DR. A. DEPAGE, General Secretary, and L. MAYER, Secretary of the Congress. Vol. I, Verbal Proceedings and Discussions. Vol. II, Reports. HAYEZ, Printer for the Royal Academies of Belgium, 1908.

The wealth and value of the material presented at this Congress are so great, that a necessarily brief review of the work can only indicate the extent of the studies presented. The main part of the papers and discussions concerned the cancer problem, especially its surgical aspect. Three years after operation was the average length of time that the surgeons considered proper in pronouncing a cure after the removal of a carcinoma. Von Bonsdorff of Helsingfors, presented some striking results in operations for carcinoma of the lip. In 80 per cent. of his cases there was no recurrence in three years; 90 per cent. of all his recurrences appeared within the first three years, and 20 per cent. of these that were operated upon were permanently cured. Von Bonsdorff's operation is very radical and in the wide exposure of the neck he removes the submaxillary glands, the glands along the sternomastoid and the great vessels of the neck, and he does not hesitate to carry his dissection into the subclavian region.

On the basis of a consecutive series of 172 cases of cancer of the mouth and tongue, Warren, of Boston, advocated block dissection of the lymphatic-bearing tissues of the anterior cervical triangle on one or both sides as a routine procedure. Fourteen per cent. of his cases were free from recurrence for over three years—all supported by microscopical examination of specimens removed. Gluck, of Berlin, employs his same technic in his laryngectomies for carcinoma, and believes, as before, in the great value of implantation of the tracheal stump into the neck for the prevention of post-operative pneumonia. His immediate and ultimate results are nothing short of brilliant.

In a splendid paper on skin carcinoma, Morestin, of Paris, pointed out that all these lesions at their beginning can be cured by minor surgical procedures. He, therefore, most strongly advocates early operations, believing that the x-ray is often efficacious, but cannot be invariably depended upon. Late interferences are often useless, despite huge extirpations, and are not infrequently attended

by ugly mutilations. Nevertheless, believing that the process is a local one, he does not hesitate to speak upon advanced cases, and figures some beautiful results after excision and plastic closure of the defect. On the other hand, Sequeira, of London, reports good results from the radiotherapeutic treatment of rodent ulcer. Seventy-five patients were well after three years, six for more than six years, and fourteen for at least five years. Forty-six cases did not heal, of which a number, apparently healed and later recurred and several healed superficially while the disease had extended to the bone.

The treatment of inoperable cancer is the subject of an able paper by Henry Morris. He gives a broad view of the subject, paying especial consideration throughout to the viewpoint rather than that of the statistician of operations. His sane paper is well worth reading.

Post-Mortem Pathology. A Manual of the Technic of Post-Mortem Examinations and the Interpretations to be Drawn Therefrom. A Practical Treatise for Students and Practitioners. By HENRY W. CATTELL, A.M., M.D., President of the Philadelphia Medical Jurisprudence Society, 1905-1906; sometime Pathologist to the Philadelphia, Presbyterian and Pennsylvania Hospitals, etc. *Third Edition.* Octavo; 547 pages; copiously illustrated with colored plates and figures. Philadelphia and London: J. B. LIPPINCOTT COMPANY, 1906.

A thorough perusal of this book has left us with a rare sense of satisfaction. The completeness with which the author has handled the subject affords no opportunity for any suggestions. After describing in the fullest detail the technic and proper order in which a post-mortem examination is to be made, the author proceeds to a cursory review of the various pathological lesions to be encountered. These chapters form, indeed, an excellent résumé of gross pathology. Succeeding chapters deal with the post-mortem examination of the newly born, restricted post-mortem examinations, restoration and preservation of the body, diseases due to parasites, the preservation of tissues, bacteriological investigations, post-mortem examinations of the lower animals, plant pathology, medico-legal suggestions, the Prussian regulation for the performance of autopsies and the nomenclature, complications and synonyms of the usual causes of death. The author makes liberal references to the literature. The style is clear and the exposition is rendered interesting by the introduction of illustrative observations. The illustrations are numerous, sufficiently large to interpret details and nicely executed.

This book can be justifiably regarded as a "standard" work of its class.

Treatment of the Diseases of Children. By CHARLES GILMORE KERLEY, Professor of Diseases of Children, N. Y. Polyclinic Medical School and Hospital; Physician to the N. Y. Infant Asylum and Maternity, etc. *Second Edition*, revised. Large octavo; 629 pages; 78 illustrations. Philadelphia and London: W. B. SAUNDERS Co., 1909. Cloth, \$5; half morocco, \$6.50 net.

An excellent book is Dr. Kerley's on the Treatment of the Diseases of Children. The general practitioner, for whom it is written, will appreciate the general soundness of his views; although the specialist will find faults with quite a few of the suggestions—all men who specialize have individual views. For example, Dr. Kerley thus summarizes his results in the use of buttermilk feeding of infants after the treatment of nineteen cases: "We do not advise treatment of milk with the lactic acid bacillus for purposes of infant feeding. These results are so far inferior to those following our usual methods of treatment that all observations were discontinued at this point." Again he states: "I give little or no milk in typhoid fever." It would be of interest to Dr. Kerley to discover just what food value he can get out of his "stock" gruel with additions. Skimmed milk is allowed later; why not before? or why not use diluted milk mixtures as in other febrile conditions? Full milk is not given in most of them—few give it to the young typhoid patients.

In this edition the work has been enlarged but little. Two new sections appear, viz.: on the care of acute illness, and on vaccine therapy and new diagnostic methods. The section on growth and nutrition has been considerably altered. The book continues as a clear and thorough presentation, eminently practical, and bearing throughout the impress of capable individuality.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. Part VIII. Gout. By PROF. DR. H. STRAUSS, Professor of the Third Clinic, Royal Charity Hospital, Berlin. Translated under the direction of NELLIS BARNES FOSTER, M.D., Associate Physician to the New York Hospital; Associate in Biological Chemistry, College of Physicians and Surgeons, Columbia University. Duodecimo; 70 pages. New York: E. B. TREAT & COMPANY, 1909. \$1.00.

Written seven years ago, this monograph has been revised and amplified by the author for the American edition. The pathogenesis of gout covers more than one-half of the book, especial attention being paid toward the chemical relations of uric acid and the xanthin bases. The part devoted to treatment is exhaustive. It is comforting to note that the author places considerable reliance upon colchicum and the salicylates. The book can be cordially recommended as an up to date and practical treatise. The absence of an index is, however, to be deplored.

Clinical Treatises on the Symptomatology and Diagnosis of Disorders of Respiration and Circulation. By PROF. EDMUND VON NEUSSER, M.D., Professor of the II Medical Clinic, Vienna. Authorized English Translation, by ANDREW MACFARLANE, M.D., Professor of Medical Jurisprudence and Physical Diagnosis, Albany Medical College, etc., etc. *Part III. Angina Pectoris.* Duodecimo; 71 pages. New York: E. B. TREAT & COMPANY, 1909. \$1.00.

Although this monograph was written by Neusser a number of years ago, it still remains the best clinical review of angina pectoris with which we are acquainted. The author reveals here, as in all his other publications, his almost amazing clinical experience. We feel sure that no one can read this work without adding appreciably to his knowledge of the subject.

Diet in Health and Disease. By JULIUS FRIEDENWALD, M.D., Professor of Gastro-Enterology in the College of Physicians and Surgeons, Baltimore, and JOHN RUHRÄH, M.D., Professor of Diseases of Children, College of Physicians and Surgeons, Baltimore. *Third Edition*, revised and enlarged. Octavo; 764 pages. Philadelphia and London: W. B. SAUNDERS Co., 1909. Cloth, \$4.00; half morocco, \$5.50 net.

Striking advances in dietetics have occurred with the decline in medicinal therapeutics. Enlarged knowledge of metabolic changes based on chemical and physiological experiments have replaced the dietetic empiricism of older methods. The attempt to adopt changed body functions to suit impaired cellular activity finds place in the new edition of Friedenwald's and Ruhräh's Diet in Health and Disease. There is an enormous amount of information crowded into comparatively small bulk, and the advice given is, with few exceptions, up to the most recent requirements. The diets in the Disorders of Metabolism are especially to be commended for their modernity. The older, empiric fables, not based upon accurate observation, might, however, be dispensed with in a manual that is eminently practical.

This volume may truly be declared to fill a want, and its possession by the general practitioner and the surgeon will add greatly to the comfort and well-being of the patient. The feeding of infants is excellently handled without faddism. There are chapters on Army Rations, Prison and Hospital Dietaries, all sorts of diet and food tables recipes—in short, this work may be described as complete, modern and useful.

Progress in Surgery.

A Résumé of Recent Literature.

The Colon Tube and the High Enema. H. C. SOPER, St. Louis, *Journal of the American Medical Association*, August 7, 1909.

Soper describes experiments performed by him in which the position of the tube was verified by the *x*-ray. Sixty cases were examined where it was attempted to pass long blunt end soft rubber tubes, with side openings, into the rectum, the patient being in the knee-chest and side positions. The only case in which he succeeded in passing the tube above the dome of the rectum was one of Hirschsprung's disease or congenital idiopathic dilatation and hypertrophy of the colon, and even here it was necessary to use the sigmoidoscope to introduce the tube. He thinks it is only in cases of abnormal development of the sigmoid that it is possible to introduce a soft rubber tube higher than six or seven inches in the rectum. A short tube six inches in length is therefore best for all sorts of enemata when using water for fecal evacuation, and it is possible, as he has frequently demonstrated, to thoroughly cleanse the entire colon by using a large caliber (one-half inch) short tube. It is also best when retention of liquid is desired.

Goiter with the Surgical Treatment of Hyperthyroidism. C. H. MAYO, *Texas State Journal of Medicine*, July, 1909.

The extraordinary amount or proportion of the blood in the small vessels, the heart having lost the *vis a tergo*, increases the rapidity of action upon a smaller quantity of blood. Later when the overwork and toxemia from the elimination of the disorganized epithelium of the thyroid has caused a degeneration of heart muscle, liver, spleen, and kidney, we have a dilatation of the heart with irregularity in rhythm and tension. In incomplete contraction and imperfectly closed valves with resulting pulsating large veins, the blood pressure drops from medium or high to a low point. Fatty liver and kidney changes become marked, and we have albuminous urine, ascites and edematous feet and limbs to mark the extreme condition.

The skin changes are: increased feeling of warmth, sweating, with the more rapid general metabolism manifest, and when general toxic degeneration is present the skin, as a rule, becomes pigmented.

The hyperactivity of the thyroid may begin in early childhood; the earliest we have seen beginning in children of four and five years of age. One of the latter was seven years when a thyroidectomy was made. A moderate amount of hyperthyroidism is not infrequent in girls at puberty and a few years following, a period of natural activity of the thyroid from sexual development. This is often true of the normal thyroid during pregnancy.

In some cases the goiter, and again the eye changes will appear early, or these may be late symptoms, while in others the goiter will have existed as a simple colloid for a long time previous to overactivity.

Unilateral exophthalmic goiter is usually that variety caused by the stimulus of an encapsulated adenoma growing in the lobe of the thyroid, which later causes pressure absorption of the gland with attacks of intermittent hyperthyroidism, and in which all the symptoms occur except that of proptosis.

In about two-thirds of the cases seen by the surgeon, the operation for the removal of the larger lobe and isthmus can be undertaken without undue risk. In at least one-fourth of the cases the condition is so extreme from the continued toxic condition or from acute exacerbation, that the ligation of the vessels as advocated by Wolfier is advisable at least as a preliminary procedure. In a few such cases the results are astonishing. There is a relief from all symptoms and an increase in weight within a few months, and should thyroidectomy be then undertaken, it will be done with much less risk than the former procedure of ligation. This operation we designate *the graduated operation for hyperthyroidism*.

Subclavian Aneurism with a Report of a Successful Ligation in the First Surgical Division. E. M. PRINCE, *The Alabama Medical Journal*, July, 1909.

J. H., age 43, was brought into hospital suffering from a large tumor which had displaced the clavicle and had encroached on the brachial plexus to such an extent as to produce paralysis of the entire arm, causing him to suffer excruciating pain. The tumor commenced to form after having received a severe blow on the shoulder one year previous, and had increased steadily since. He gave a history of syphilis, otherwise his past history was uninteresting, save that he had been a hard drinker and was suffering from arterio-sclerosis. An *x*-ray picture was made and the diagnosis of aneurism of the second surgical division of right subclavian artery was confirmed. Operation was advised and the patient informed of the risk attending the operation for ligation of the first surgical division of this artery. The patient consented and the operation was performed as follows: An incision was made along the upper border of the clavicle and a second along the inner border of the sterno-mastoid muscle, meeting the former at an angle. Both heads of the sterno-mastoid were divided, and a few vessels were encountered which required ligation. The deep fascia was then torn through and the internal jugular vein was seen crossing the subclavian artery. This was pulled aside, exposing the artery, and the origin of the vertebral was then demonstrated, also the common carotid. A ligature was passed from below upwards around the subclavian near the vertebral in order to give as much space for the formation of a clot between the ligature and the common carotid as possible. The beginning of the aneurysmal sac was the thyroid axis vessel. The operation required 17 minutes to complete it and patient left table in good condition. The arm was strapped to side by adhesive and retained perfectly fixed in this position by bandage for eight days.

A New Plastic Operation for the Relief of Cicatricial Palato-Pharyngeal Contractures and Adhesions. JOHN O. ROE, *N. Y. State Journal of Medicine*, July, 1909.

The operation was performed on a patient who had an extensive laceration of the soft palate after tonsillectomy with adhesions so strong and extensive that they practically occluded the entire nasopharynx.

The adhesions were divided and the edges freshened. A mucous membrane flap was taken from the inside of the cheek near the lower jaw including sufficient submucous connective tissue to assure the vitality of the flap. This was then brought down and the end turned backward and upward around the lower border of the soft palate, which had been sufficiently denuded of its mucous membrane around its lower border to secure union. This flap was then stitched at the sides and also through and through along the upper border of the end of the flap that had been turned up behind the palate.

Complete union of this flap took place, and on healing there was no undue contraction at the site of these flaps, nor was there the slightest inclination for a re-adherence of the soft palate to the pharynx at any point, all of which was very gratifying. No attempt to cover the center of the soft palate with mucous membrane was made, as the soft palate hung so free from the pharynx that adhesion of the two surfaces could not take place. The surfaces from which the flaps had been taken were speedily covered with mucous membrane and soon all traces of it disappeared.

The central portion of the palate was quite thickened and this thickened tissue was utilized by cutting and stitching it into shape so as to form a very desirable uvula. And as the levator palati muscles had not been sufficiently injured to destroy their function, by the construction of this new uvula the function of the soft palate in closing the posterior nares during deglutition and phonation was almost completely restored.

At the time the patient came under my observation, the voice necessarily was completely nasal, and the patient, from the effects of mouth breathing had been gradually losing flesh and strength and had become exceedingly

nervous, but after the liberation of the palate and the restoration of complete nasal respiration she gained rapidly in flesh and strength, and at the end of three months had the third patient, the recess consisted in a mesially placed transverse slot-like cavity, about $\frac{3}{4}$ inch long and $\frac{1}{2}$ inch in depth. There is no valid embryological explanation of completely regained the thirty pounds she had lost during this deformity. The first two cases were easily cured by

dissection of the lining membrane of the sinus.

The Grafting of Articulations (*La Greffe des Articulations*). HENRI JUDET, Paris. *Revue de Chirurgie*, July, 1909.

The first experimental work establishing the possibility of grafts of articular cartilages was performed and described by the author in 1906 (therefore antedating Lexer's work on the human being by nearly two years). Judet's work was stimulated by the fact that ankylosis of the knee is incurable, whereas in ankylosis of the upper extremities good results have been obtained by conservative resections, muscle interpositions, etc.

The essential factors in ankylosis of the knee-joint are: 1. Invasion of the articular cartilage by the inflammatory process. 2. The synovial tissue undergoes scar formation, becomes continuous with periosteum, and the articular cavity is effaced.

By a series of experiments, Judet showed that the articular cartilage could be readily transplanted; when the sections were made several months later, there were all the macro- and microscopical evidences of true grafts, with no absorption of cartilage. In subsequent experiments he found that the ideal grafts were obtained when a shell of bone was taken along with the articular cartilages. He then practiced with success heteroplastic grafts between the articular cartilages of the cat and dog.

His next object was to ascertain whether cartilaginous grafts were successful in the absence of synovia. By a series of interesting experiments he showed that they were not. The most striking one was that in which he resected the right and left knee-joints of a rabbit. The one joint was stripped of its synovial sheath, the other was left intact. The joints were subcutaneously implanted in another animal. After a number of months the joints were extracted and it was found that the joint-surfaces of the intact specimen were normal grossly and microscopically, whereas in the joint whose synovial sheath was removed the cartilages had degenerated, were shriveled, and practically destroyed. The former joint presented free mobility, the latter joint was immobile.

Contribution to the Knowledge of Post-Traumatic Ossifications (*Beitrag zur Kenntniss der Posttraumatischen Ossifikationen*). A. PFISTER, Altona. *Archiv für Klinische Chirurgie*, Bd. 89, Heft 4.

Stieda, who described ossification in the soft parts about an injury to the bone explained his cases on the basis of a fragment springing off the bone, and Vogel, who later described similar cases, agreed with Stieda, but found that direct trauma alone could produce the condition. Pfister, on the basis of two cases, shows that ossification may take place in the soft parts without any injury of bone or periosteum.

His first case was a boy of fourteen, who came under observation ten weeks after a wheel had struck the inner aspect of his knee. The internal condyle was thickened and tender. Two inches above it, a tender, plum-sized mass overlay the femur. The latter was found, by the x-ray, to be a sliver of bone lying near the femur but showing no connection with it; over the internal condyle but not connected with it was another similar fragment of bone. In no part could a fracture of the femur be found. Seven weeks later the upper area of ossification was disappearing, and three months later was gone; while the lower one, which lay across the epiphyseal line, was attaching itself to the bone or cartilage at this line.

The second case was an adult who came to the hospital shortly after falling down stairs. There was an effusion into the knee-joint. X-ray showed a fracture of the external condyle. No other abnormal shadows were present. Five weeks after the injury, an area of ossification ap-

peared, for the first time, over the internal condyle. As in the first case, it was slim, of crescentic outline, and lay in the soft parts with no visible connection with the femur. Several weeks later, the shadow was much more intense. In none of the plates was there evident any injury of the periosteum or bone in this region.

Mechanically Induced Anemia of the Lower Half of the Body (*Die künstliche Blutleere der unteren Körperhälfte*). MOMBURG, Spandau. *Archiv für Klinische Chirurgie*, Bd. 89, Heft 4.

To obtain a reliable anemia of the lower half of the body by simple means and to replace thereby the uncertain methods and those methods involving extensive operative manipulations, Momburg described in 1903 his method of surrounding the waist by a firmly-applied elastic band.

The technic is simple. When possible, the bowels are thoroughly emptied, but this is not essential. A three-inch-wide elastic band (1-1½ yards long) is placed under the back of the patient midway between the lower margin of the costal arch and the pelvic brim. With the aid of an assistant the band is carried around the waist slowly and with only enough traction to use up its elasticity. Two to four turns have always been sufficient. The most important feature of the method is to observe the femoral pulse after each turn of the band and never to apply an additional turn after the pulse is obliterated. Esmarch bands are now placed about each of the patient's extremities, so that, when the waist band is removed, the lower half of the body is not too suddenly flooded with blood. This might result in disturbances of the heart, and therefore the bands on the extremities are removed one by one. When it is desired to avoid all loss of blood in such operations as exarticulation at the hip an Esmarch bandage is first applied from below upwards, and then the Momburg band is applied.

Momburg has collected 34 cases in which his method has been used. In every case it was successful in producing the ischemia desired, in no case was any injury to the abdominal contents noted (a number of the cases died at various times after the application of the band, and there were ample post-mortem observations to support this statement), in no cases did the patient show any untoward results from the application of the band. Several cases of post-partum hemorrhage with atonic uterus are described in which the uterus contracted and the bleeding stopped immediately, after the application of the band, and the uterus remained contracted after the band was removed. In one case in which the abdomen was opened with the band in place, the intestines were not expressed through the incision.

Narcosis with the band in place was smooth and even. In several cases the band was applied to patients not under narcosis, and there was no greater pain than that usually seen with the Esmarch band. With the band in place, patients require much less anesthetic; when the band is removed the patients recover rapidly from the anesthetic. The band has been kept on, in the reported cases, from a few minutes to two hours and twenty minutes.

[See AMERICAN JOURNAL OF SURGERY, August, 1909, p. 281, for two reported cases in which cardiac collapse occurred shortly after the application of the Momburg band. Also see Neuhaus' modification of the Momburg method on the same page.—Ed.]

The Use of Momburg's Ischemic Bandage in Post-Partum Hemorrhage (*Ueber die Anwendung des Momburg'schen Schlauches bei Postpartumblutungen*). A. RIELÄNDER, Marburg. *Zentralblatt für Gynäkologie*, July 10, 1909.

Nine cases of post-partum hemorrhage were treated by means of a thick elastic rubber tube wound twice about the body above the level of the umbilicus and tightened until both femoral pulses became imperceptible. Several cases of placenta previa with moderate cervical tears, cases of atony, and of simple cervical tears, were tested. The results were not encouraging. The applica-

tion caused pain, had a depressant effect on the heart and did not completely control the bleeding. Other measures, such as intrauterine douches, tamponing, etc., had to be resorted to finally. The author is not as yet ready to condemn the method, but he believes that post-partum the necessity of applying the tube high up, and the more or less fullness of the intestinal tract usually present, render the ischemia less satisfactory than when used for ordinary surgical procedures.

The Operative Treatment of Acute, Subcutaneous, Traumatic, and Complete Paralysis of the Lower Roots of the Cervical Plexus (*Beitrag zur Frage der operativen Behandlung der subcutanen-acute-traumatischen complete Lähmungen der unteren Wurzeln des Plexus cervicalis*). PROF. BARDENHEUER, Coln. *Archiv für Klinische Chirurgie*, Bd. 89, Heft 4.

The type of injury with which the writer deals is one in which complete paralysis of a group of muscles follows immediately a violent trauma applied either directly or indirectly to the lower roots of the cervical plexus—e. g., a heavy weight falling on the shoulder. He does not include in his paper the less acute traumata of the cervical plexus, as those occurring in narcosis, the crutch-palsy, etc. The author was led to the operative treatment of these severe injuries because with conservative treatment the results have not been good. Other observers have frequently noted that in severe crushings of nerves scar tissue forms, which usually means permanent paralysis.

In his experience of ten cases of the type in question, Bardenheuer discovered the interesting fact that the nerve-trunks or -roots are usually not torn across. In one case several nerve-roots were torn out of the spinal cord. In only one other case the nerve-roots were torn across, and here there was the question of injury to the spine. The usual condition is that by the trauma the nerves are crushed, the surrounding lymph- and blood-vessels are lacerated, often the adjoining scaleni muscles are torn—the result is an immediate paralysis. Most often the fifth and sixth roots are seriously involved; the seventh and eighth to a lesser degree. Therefore, the sensory disturbances are not usually profound.

Indications for operation do not depend on an exact neurological localization. They depend rather on a severe injury, tenderness over the region of the plexus, involvement of the nerves below the situation of the determined lesion of the brachial plexus; and in older cases no improvement with conservative treatment, development of the reaction of degeneration, atrophy, etc. Oculopyramidal manifestations, such as myosis, narrowed palpebral fissure, exophthalmos, point to the tearing out of the cord of the seventh to ninth roots.

The patients were operated upon from two days to four months after the injury, and the best results were, by far, in the early cases. Practically, the operations consisted in removing the infiltrated hemorrhagic exudate that surrounded and compressed the nerves. In the advanced cases, the scar-tissue that compressed the nerves was excised. Because of the atrophy and laxity of the muscles following the injury to the plexus, it is of great importance to properly support the arm-weight six to eight weeks after operation.

Some cases of birth-palsy go into this group of cases for which Bardenheuer advises operative interference. In general, he says, in one-half the cases the prognosis is good, by the usual treatment. But in the cases in which there is no improvement in three to four weeks, in which the history shows that forceps have been applied or version, etc., performed, or in which there is a fracture, the author advises operation. He obtained a good result in one case, albeit the operation was very difficult, with the minute nerves embedded in an old extravasation of blood.

The Prevention of Perineal Lacerations. E. K. MACCOMBER, Amsterdam, N. Y. *American Journal of Obstetrics*, August, 1909.

Perineal lacerations in primiparæ vary from 11 to 21 per cent. After the cervix has become dilated to about the size of a silver dollar the author introduces a Cham-

petier de Ribes bag into the vagina and distends it with fluid. During the pains the bag is pushed down and dilates the vagina and perineum. He also claims that by this method the cervix dilates more rapidly and the second stage pains are rendered more efficient. Should the pains die out traction on the bag at once stimulates uterine contractions. In 85 primiparæ he has had only three lacerations.

Septic Gastritis of Buccal Origin (*La Gastrite Septique d'Origine Buccale*). TELLIER. *Annales de Medicine et Chirurgie Infantile*, July 15, 1909.

Imperfect mastication is the rôle that dental caries is usually supposed to play in gastric disorders. Tellier believes that carious teeth are factors of practical importance in some serious gastric conditions. Cases that he calls "septic gastritis" have been found to be due to the swallowing of pus from areas of pyorrhœa alveolaris; and the removal of the foci in the mouth has immediately relieved the gastric symptoms.

A New Form of Operative Treatment for Femoral Hernia (*Eine neue Methode für die operative Behandlung der Femoralhernien*). ABRASHANOFF, Poltawa. *Zentralblatt für Chirurgie*, No. 29, 1909.

The author considers the ideal operation for hernia one which combines the principles of Bassini and of Kocher—muscle suture, and transplantation of the neck of the sac, respectively. In femoral hernia he therefore proceeds as follows:

The sac is isolated, opened, and emptied in the usual manner and its neck is freed as high up as possible. The neck is transfixed and tied off with a silk strand, whose ends are left long. The latter are then threaded, and the needles are carried from within outward through the abdominal wall above Poupart's ligament (excluding the skin, of course). The most important step is to carry these threads through Cooper's ligament. This is done by retracting Poupart's ligament strongly upwards, and passing the needles close to the horizontal ramus of the pubis as the guide. The ends of the threads are now tied together.

By this suture the neck of the sac is drawn upwards, and the abdominal wall is drawn downwards to the os pubis, obliterating the femoral canal.

The author has obtained satisfactory results by this method in eight cases.

A Method of Combining Exploration and Decompression for Cerebral Tumors Which Prove to Be Inoperable. H. CUSHING, Baltimore. *Surgery, Gynecology and Obstetrics*, July, 1909.

Where extensive exposure is needed for exploration a temporary osteoplastic flap is the method of choice. If it is then found that the tumor is inoperable removal of the bone flap leaves a large unprotected area through which a hernia cerebri over an "active" part of the brain develops. Cushing makes the usual omega flap (with the aid of a tourniquet) and then, when the occasion arises, uses a rongeur to remove a circular area at the base of the flap underneath the temporal muscle. A narrow area of bone is left at either side of the base of the bone flap. The dura over the proposed subtemporal area is incised in a stellate manner and the remaining bone is replaced as usual. The resulting decompression is subtemporal and over a "mute" area.

The Demonstration of an Autogenous Antiphylactic Antibody in the Serum of Cancer Patients, with Preliminary Remarks Upon These Findings (*Ueber den Nachweis eines, gegen das eigene Karzinom gerichteten anaphylaktischen Antikörpers im Serum von Krebskranken nebst vorläufigen Bemerkungen zu diesem Befunde*). H. PFEIFFER and J. FENSTERER, Graz. *Wiener Klinische Wochenschrift*, July 15, 1909.

If a guinea-pig is injected subcutaneously with serum from a cancer patient, and 48 hours later the animal is again injected intraperitoneally with a compression extract of the tumor of the same patient, the animal will show

symptoms of anaphylactic shock, demonstrable in approximate terms by a rise in the rectal temperature. Furthermore the authors found that these phenomena also followed when the injection of the extract of an alien carcinoma is introduced. The authors believe that this phenomenon may develop into diagnostic, prognostic and therapeutic importance.

The Roux Radical Operation for Femoral Hernia and Its Results (*Ueber die Radikal operation der Schenkelhernien nach Roux und ihre Resultate*). F. v. GSCHMEIDLER, Vienna, *Wiener Klinische Wochenschrift*, July 27, 1909.

Roux' method consists in the anchoring of Poupart's ligament to the horizontal ramus of the pubis by means of a \square -shaped staple, thereby closing the femoral ring. In Hochenegg's clinic this operation has been done 38 times. In 28 patients in whom the end result could be followed there was one recurrence, and this was in a large hernia which had been operated upon unsuccessfully a number of times previously. No untoward effects have been noted and the operation is highly commended by the author.

Pneumococcic Arthritis. A. STRICKLER, Philadelphia, *New York Medical Journal*, July 17, 1909.

In a statistical study of the 63 hitherto reported cases of this affection, the author finds that pneumococcic arthritis occurs about once in 800 cases of pneumonia. The vast majority of those affected were males. Only four cases are recorded in which a pneumococcic arthritis occurred without a previous pneumonia. The symptomatology is that of an ordinary acute arthritis. Rarely, the process is extracapsular. Pneumococcic arthritis is apparently a grave complication, inasmuch as 50 per cent. of the patients died. Treatment consists in mere tapping in mild cases and incision and drainage in the purulent varieties. The author reports a case in which the arthritis had no relation to a previous pneumonia. Much benefit was derived by the application of Bier's hyperemia.

Some Aspects of the Pathological Physiology of Intracranial Tumors. HARVEY CUSHING, Baltimore, *Boston Medical and Surgical Journal*, July 15, 1909.

Contrary to the common belief, brain tumors are of frequent occurrence, and possibly there is no disease in which the symptoms are more often overlooked or incorrectly interpreted. For the sake of successful palliative or curative measures, a precocious diagnosis is necessary, and a careful clinical study of all suspected cases at an early stage, with a more intimate knowledge of the local and general pressure phenomena, will tend toward this desired goal.

A more widespread familiarity with the early appearance of the neuroretinal edema and congestion is needed, and also the understanding that this condition is merely a stage in the process of a choked disk. Inversion or interlacing of the boundaries of the color fields, heretofore regarded as pathognomonic of hysteria, has been found to be a fairly constant early phenomenon in tumors.

One recognized characteristic of the brain under pressure is its tendency to herniate through a cranial defect, and as there is normally an opening at the foramen magnum, a certain degree of protrusion is usually present there. In the presence of such a condition, the withdrawal of the cerebrospinal fluid from the spinal meninges by a lumbar puncture is often hazardous, as it may tend to a sudden wedging of the bulb in the opening, with anemia and paralysis of the vital centers.

The pituitary body proves to be one of the most important of the ductless glands. It not only may be the primary seat of a new growth, but in the case of intracranial tumors elsewhere, particularly when they are accompanied by hydrocephalus, its function may secondarily become disturbed in ways which are clinically recognizable.

The conducting paths in the brain are more often affected by simple pressure from tumors than by actual destruction, and the removal of the growth or simple relief from pressure may often lead to a surprisingly rapid restoration of function.

For an accurate focal diagnosis a thorough, early examination is often necessary, for with an advancing lesion

symptoms at a distance may greatly confuse the clinical picture. A considerable percentage of cases that present themselves for surgical treatment are so nearly blind that a study of the visual fields, which should be one of the most helpful localizing signs, is precluded.

From a histological point of view the classification of brain tumors is most unsatisfactory, and the general behavior and manner of growth of many of them does not conform with accepted views. Some gliomata may be definitely encapsulated and favorable for operative removal, and many tumors of this supposedly malignant type may undergo cystic degeneration or gelatinous transformation.

On Joint Transplantation (*Ueber Gelenktransplantation*).

E. LEXER, Koenigsberg. *Archiv für Klinische Chirurgie*, Band 90, Heft 2.

The writer reviews his experience in the free transplantation of joints (a principle that he first evolved and practiced on the living about 1½ years ago, to replace joints ankylosed from various causes). His experiences are practically limited to the kneejoint.

The incision must be so placed that the skin sutures nowhere overlie the transplanted joint. Lexer, therefore, always attempts to make a large flap of skin, but this is not infrequently impossible because the integument is adherent to the bone from the previous inflammation, sinuses, etc. An Esmarch bandage is not employed, since the smallest overlooked hemorrhage between the transplanted and the original bone may (and did in one case) mar the result. After trying various angles, Lexer now divides the bones at right angles to their long axes. All normal periosteum and tendons (especially the patellar ligament) are carefully avoided in the excision of the joint.

For transplantation material, all joints from cases of communicable disease, tumors, etc., must be excluded. The best material is obtained from cases of amputation for dry arteriosclerotic gangrene and for trauma. The preparation of the joint to be transplanted must be made under most rigid asepsis, and every fragment of tissue down to the periosteum must be carefully removed. The problem of the transplantation of synovial membrane for the joint has not, as yet, been solved. Apparently, in one case, the bad result—development of suppuration, fistulae, etc.—was due to the death of the transplanted synovia. Hydrocele sac has been employed with no brilliant result, in two cases. Good results may be obtained when synovia is secondarily implanted, some time after the primary graft of the joint.

All forms of nails or sutures should be avoided in the fixation of the transplanted joint, because they lead to formation of granulation tissue and to bone absorption. A muscle plastic is often of the greatest importance for the later function of the transplanted joint, and here the greatest difficulty may be encountered because all available muscles may have atrophied from disuse and disease. No set rules can be laid down, and any of the muscles near the joint may have to be employed. The experimental demonstration of the transplants of tendons, shown by the younger Rehn to be feasible in both man and animals, may be of great future significance in this connection.

The after-treatment is planned along the usual lines for bone operations. The first movements are practical when the x-ray shows that bony union has taken place. The patient begins to use the joint when the active and passive motions in bed show that it is ready.

Skin Disinfection with Iodine in Abdominal and Other Operations. CHARLES JEWETT, Brooklyn. *Medical Record*, August 14, 1909.

The method is that published by Grassich one year ago, and is extremely simple. Some hours before the operation, the field is shaved dry and is then painted with a 10 or 12 per cent. tincture of iodine. No water or other liquid is permitted to come in contact with the skin. The surface is covered with a dry sterile dressing. On the operating table the painting is repeated. As an additional precaution, the author shaves and thoroughly cleanses the skin twelve hours before the iodine is applied.

The author has obtained primary union in every case in which this method was resorted to.

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SOME EXPERIMENTS IN CERTAIN METHODS OF INTESTINAL ANASTOMOSIS.*

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Previous to the application of antiseptic principles to surgical technic, the operations of intestinal resection and anastomosis were considered to be extremely dangerous and were very rarely performed. The history of the development of this branch of surgery is extremely interesting.

The very earliest period in which an intestinal suture is mentioned is by Celsus, A. D. 20, and the first description of it was given by the Italian surgeons of the Middle Ages. The statement is made in the literature that Guilielmus de Saliceto (about 1500) sutured the bowel over a segment of dried intestine. He employed also the so-called suture of the "Four Masters," which consisted of four interrupted sutures passed through the divided bowel and the trachea of a goose which had been inserted within the bowel to keep the lumen open.

Even in 1686 it was considered too dangerous to suture wounds of the small intestine, as can be seen by consulting the writings of Richard Wiseman, who used the glover's stitch in suturing wounds of the large intestine. Heister in 1739 thought that it was useless to suture the intestine on account of the high mortality attending it, but preferred the glover's stitch if the operation were done at all. Thus it appears that during the last century and up to about 1812 it was the general opinion among surgeons that wounds of the small intestine ought never to be sutured and that it was practically a hopeless operation to suture the large intestine.

Later on the wounded intestine was sutured to the anterior abdominal wall, thus making an artificial anus, with no attempt at repair of the wound of the intestine at the time of operation or even afterwards. Such was the method of Palfyn, who carried a loop of thread through the edges of the intestinal wound and fastened the ends externally. Peyronie passed a double thread around the bowel.

Others used a single stitch with the same idea in view.

Reybard, of Paris, in 1827 used a slightly different method to cause adhesions to form between the peritoneal coat of the intestine and the abdominal wall. He used a small strip of wood with rounded edges, in the middle of which two holes were made about a line apart. A loop of thread was carried through these holes and the piece of wood was inserted in the intestine. Each end of the thread was then carried on a needle from within out through the edges of the intestinal wall. The sutures were then threaded with curved needles and carried through the abdominal wall from within outwards and tied externally. Reybard cut the thread two days after the operation and the strip of wood fell into the intestine. The mortality following this operation was high and those who recovered developed fecal fistula.

The first successful intestinal anastomosis was done by Ramdohr in 1780 by invagination and suturing the bowel to the abdominal wall. Travers in 1812 was the first to discover that an intestinal anastomosis could be successfully performed without suturing the bowel to the abdominal wall.

Lembert, of Paris, in 1825 and 1826 did the pioneer work in modern intestinal suturing. As his method is universally misunderstood and misquoted in all surgical text-books and journals I take the liberty of quoting freely from one of his original articles as read before the Surgical Section of the Royal Academy of Medicine of Paris, January 26, 1826. Lembert says that he "employs as many needles as there are points of suture to be passed. The needle penetrates into the cavity of the intestine about two lines from the edge of the wound or its point glides between the muscular and mucous coats according to the thickness of the intestine, then the point of the needle is made to come out again about one line from the edge of the wound whence it is carried across the wound and made to penetrate the bowel wall about one line from the edge of the wound and comes out about two lines distant. When the suture is tied the serous membranes are brought together and the

* Read before the Michigan State Medical Society, September 16, 1909.

free edges of the wound are inverted into the cavity of the intestine and form a projection into it of greater or less extent. The sutures cut through little by little the small portion of the intestine which they include and fall into the intestine." Thus Lembert's original idea was to get union of serous surfaces by means of a suture which passed through all the coats of the intestine. It was only by accident that some of the sutures failed to penetrate the mucous coat. Consequently the sutures always disappeared into the lumen of the bowel. Even after the third day following the operation Lembert could find no sutures at the site of the operation. The suture which is described at the present time as Lembert's is really a sero-muscular stitch which does not penetrate the mucous coat of the intestine and must be differentiated from Lembert's original suture if we wish to be historically accurate. Furthermore a sero-muscular stitch will not disappear into the lumen of the bowel but will remain indefinitely in the intestinal wall, as I have frequently demonstrated in specimens of end-to-end anastomosis which have been performed on dogs in the Surgical Laboratory of the University of Michigan. It is only when this suture becomes infected by penetrating the mucous coat that it disappears into the lumen of the bowel. Consequently the sero-muscular stitch should not be described as Lembert's as it is in all the surgical literature of the present time.

On account of the danger of retraction of the mucous membrane with the attending fecal extravasation and possible obstruction of the bowel when the mucous membrane is not sutured, two rows of stitches are generally employed; one to include the mucous membrane and the second, a row of sero-muscular stitches, to maintain the union until repair is complete. The mortality following the operation of intestinal resection has been considerably reduced in recent years by a gradual improvement in technic. Mayo reports a mortality of twelve per cent. in one hundred cases of resection of the large intestine with lateral anastomosis. In end-to-end anastomosis the mortality is considerably higher, being about forty per cent.

The Connell suture is an attempt to overcome some of the difficulties which attend the method by two rows of stitches. It passes through all the coats of the intestine with the knots tied on the inside instead of on the outside, as in the original Lembert suture. It has been experimentally proved that the drainage of infective material is toward the knot and, therefore, in this case toward the lumen of the intestine where it can be eliminated without causing

any peritonitis. On the other hand, if any of the sero-muscular stitches which are applied in an enterorrhaphy happen to penetrate the mucous membrane the infective material will drain toward the peritoneum and cause a localized peritonitis. It is the experience of most surgeons, however, that the accidental passage of a few sero-muscular stitches into the lumen of the bowel is usually not followed by the death of the patient if the general condition is good. There appears to be more security in a stitch which penetrates all the coats of the intestine than in the sero-muscular which includes only a part of the intestinal wall. There is also less danger of obstruction where a single row of stitches is used because there is less invagination of the intestinal wall. In operations performed on dogs by junior medical students in the surgical laboratory of the University of Michigan, there were as many recoveries after using the Connell suture for end-to-end anastomosis of the intestine as with two rows of stitches.

None of these methods, however, can be considered as aseptic, as the danger of infection from the lumen of the bowel is constantly present. During the last five years various attempts have been made to devise a method of anastomosing the intestine without opening the lumen, thus avoiding contamination of the field of operation with the infective bacteria which may be present in the intestine. J. Schnitzler, of Vienna, has recently criticised some of these methods on the ground that the present methods of performing resections of the stomach and intestine are followed by a very small mortality and that this would not be materially reduced by avoiding infection from the lumen. It seems rather curious that a prominent surgeon should announce that no further improvement is possible in operations upon the intestine.

Schnitzler maintains that the ordinary bacteria present in the stomach and intestines are not pus-producing germs and could not produce peritonitis. If this were true it would hardly be necessary to take any precautions to avoid infection from the lumen. We know, however, that the less opportunity there is for infection from the lumen, the greater the proportion of recoveries. Injuries of the stomach and intestine, which are repaired in six to twelve hours, generally result in recovery because the infection is either not virulent or sufficient time has not elapsed for peritonitis to develop. It is true, as Schnitzler says, that there are very few bacteria normally present in the stomach and upper part of the small intestine, because of the rapidity of peristalsis. In the lower two feet of the ileum and at the

ileo-cecal valve the germs become more numerous and virulent. There are some pus-producing germs always present in the intestinal tract, according to bacteriologists, and the colon bacillus which is constantly present in the large intestine may, under certain conditions produce pus, as in acute appendicitis. The danger of infection from the lumen, therefore, is always present. Cancer and tuberculosis may also be disseminated in this way. Another factor of importance is that injury of the mesentery may result in interference with the blood supply in end-to-end anastomosis and consequently gaping of the wound may follow from necrosis. In lateral anastomosis

Rostowzew, in 1906, was the first to propose a method of performing an aseptic anastomosis of the intestines or stomach. He devised quite a complicated set of instruments for this purpose. By means of an enterotribe he compresses the intestine at the proposed point of resection, then uses a strong clamp to compress the intestine at a short distance from here. The blades of these instruments are then



Figure 1.

there is greater possibility of infection from the lumen, but there is less interference with the blood supply than in end-to-end anastomosis, which accounts for the higher mortality in the latter.

The failure to include the mucous membrane in the suture as proposed in some of the more recent methods of intestinal anastomosis has been thought by some to be the possible cause of subsequent gastric or intestinal hemorrhage. On the contrary, compression of the intestine with an enterotribe and resecting it with the actual cautery is generally believed to be successful in preventing hemorrhage because it closes the mouths of the bloodvessels. It is also urged by Schnitzler that stenosis may result from lack of suture of the mucous membrane. This was demonstrated in one of my experiments. It can be prevented, however, by making oblique incisions through the intestinal wall. Madelung, in 1881, showed that the oblique incisions provide a better blood supply at the free edges and allow for the excess of intumed edge at the mesenteric border.

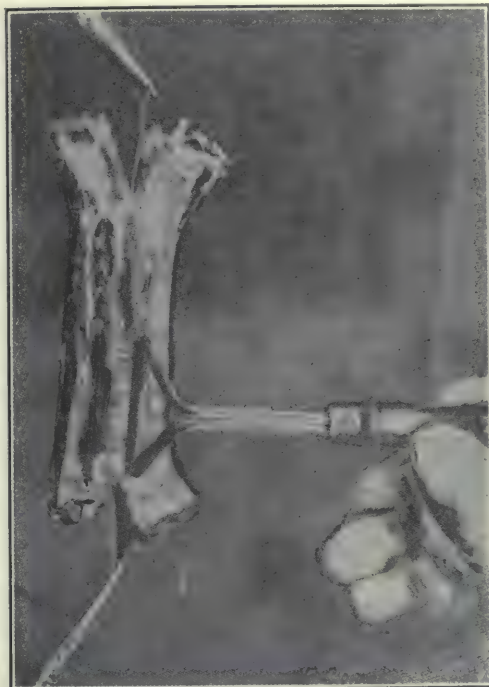


Figure 2.

heated with the actual cautery sufficiently to sear the edges of the intestine together, leaving depressions and elevations upon the intestinal wall arising from the projections and grooves on the blades of the instruments. These clamps are so constructed that the blades can be separated from the remainder and left in position upon the intestine. Next he cuts through the portion of intestine included between the two clamps with the actual cautery, thus searing the edges of the several intestine and preventing the escape of the contents. The incision is then prolonged into the mesentery after ligating the vessels. The same procedure is carried out at the other end of the proposed resection. Finally the edges of the intestine to be joined are brought together and sutured by means of a series of interrupted sero-muscular stitches passed over the clamps, which are then carefully removed and the edges of the intestine remain seared together. The lumen is restored by pulling apart the sutures, which are oppositely placed, after grasping each group of three at one time with a pair of hemostatic forceps. These stitches are finally tied and the operation completed.

This method cannot be considered as practicable on account of the complicated set of instruments which is required. Moszkowicz has modified the instruments of Rostowzew, but the principle is identical.

Parker and Kerr, of Johns Hopkins University, have devised a very simple method of aseptic anastomosis of the intestine which can be carried out with a few needles and thread and a few ordinary intes-

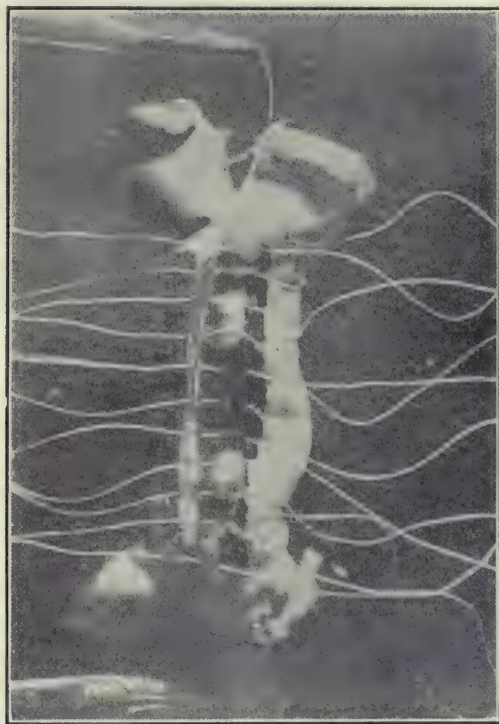


Figure 3.

tinal clamps. The intestine at the proposed point of resection is compressed by two narrow-bladed crushing forceps at first placed in actual contact and then slightly separated. By this process the walls of the intestine are glued together somewhat. Then the portion included between the clamps is divided by the actual cautery or knife. The mesenteric vessels which supply the portion of intestine to be resected are ligated and the intestine at the opposite end of the proposed resection is also divided between two clamps in the same way. The authors then apply their so-called basting stitch to each end of the divided intestine. This stitch is a continuous sero-muscular one applied loosely over the clamp. The ends of this suture are not tied because they must be removed later. Next the clamp is carefully removed and by pulling on both ends of the basting stitch one can invaginate the end of the intestine perfectly, thus preventing the escape of any of the contents of the bowel. Then a series of interrupted sero-muscular stitches is used for joining the divided ends of

the intestine. After these are tied the basting stitches are removed by pulling on one end of each.

At first the tendency is to invaginate too much of the bowel wall, especially in the case of resection of the small intestine. My first two experiments with this method were failures on this account, resulting in the death of the dogs operated upon from failure of the sutures to hold securely under so great a tension. The result was perforation of the bowel at the point of anastomosis. This was overcome in later experiments by taking the sutures nearer the edges so that no more dogs died on this account. Another complication in one experiment was retraction of the mucous membrane with accumulation of the contents of the bowel at the point of suture, resulting in stricture which caused the death of the animal about two months after the operation. Upon section of the abdomen after death the intestine immediately above the anastomosis was found to be much dilated and filled with a mass of hair firmly matted together. A flap of mucous membrane had not united with the remainder. Microscopic examination of this area showed it to be a chronic ulcer or wound scar tissue with active inflammation and marked glandular hyperplasia. This complication was afterward always avoided by using the oblique incisions of Madelung through the bowel wall. This incision is made at an angle of forty-five degrees to the axis of the intestine and gives a lumen double in area to that of the incised bowel.

In a case requiring a lateral anastomosis the method of Parker and Kerr is varied somewhat in order to be sure of grasping the mucous membrane in the clamp. Three needles are plunged into the lumen of the bowel at its free border and brought out again about one-quarter of an inch from the point of entrance. They are placed about one-half an inch apart, parallel and at right angles to the bowel axis and plane of the mesentery. The clamps are then placed beneath these needles so as to grasp the intestinal wall between the points of entrance and exit of the needles and the operation is completed the same as in end-to-end anastomosis. This operation cannot be regarded as aseptic, as the lumen of the bowel is penetrated and infection may be carried to the peritoneum in this way.

Another method of aseptic intestinal resection is that of F. B. Walker who uses a purse-string suture to prevent the escape of the contents of the intestine during the operation. These purse-string sutures are tied with a slip-knot so that they may be readily removed after the anastomosis is completed. The section of the intestine is made with the actual cautery which sears the edges together, thus pre-

venting the escape of the contents of the bowel. This method seems to require the invagination of more tissue than that of Parker and Kerr and is, therefore, more liable to be followed by obstruction from stricture of the bowel. It cannot be used for an aseptic lateral anastomosis because an opening has to be made into the lumen of the bowel.

E. Capek, of Bohemia, has proposed an operation which is very simple and can be applied both for an



Figure 4.

aseptic lateral anastomosis and a gastro-enterostomy. The communication is not established at the time of operation, but in about twenty-four hours. The loops of intestine which it is necessary to anastomose are joined with a continuous sero-muscular stitch applied near the mesenteric border. About ten millimeters from this suture an incision is made of the length of the proposed anastomotic opening and within the limits of the length of the suture. This incision is made only through the serous membrane and muscular coats exposing the mucosa. The length of the incision varies with the portion of the intestinal tract involved. The field of operation must be kept free of blood by ligating the vessels and applying a hot sponge to control the capillary ooze so as to avoid cutting the mucous membrane.

The edges of the incision are then spread two to three millimeters apart and the submucosa and mucosa cauterized with the author's cautery. (See figure I). This is a triangular-shaped instrument

made of heavy steel wire about three and eight-tenths millimeters in diameter. The length of the cautery is three to five centimeters. The hemorrhage must be stopped before the cautery is applied or the blood will cool off the instrument so rapidly that the cauterization will be incomplete and the communication will be established much later than usual or remain incomplete with the formation of a septum. It is necessary to have several of these cauteries heated at one time in order to perform the operation without any delays.

The cautery is applied at a dull red heat with moderate pressure until the smoke ceases to arise

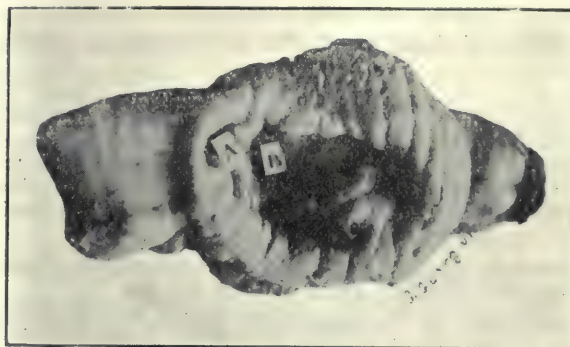


Figure 5.

and one must not remove it to apply it again, but it should be applied continuously until the cauterization is complete and it must not be allowed to burn into the lumen of the bowel. The length of time for the application of the cautery is twenty to twenty-five seconds. When the area is properly cauterized it looks like thin parchment. In the case of an intestine with very thin walls the cautery is applied directly to the serosa and less pressure is exerted than on a normal intestinal wall or it will burn through into the lumen of the bowel. (See figure II.)

The cauterized areas are brought into perfect apposition by means of two rows of interrupted sero-muscular stitches, one placed internal to them and the other external so that the corresponding edges are accurately apposed. Finally the whole wound is covered in with a continuous sero-muscular stitch. (See figures III and IV.)

I have done five lateral anastomoses and two gastro-enterostomies by this method with success. The necrosis which is set up as a result of the cauterization of the mucous membrane causes it to yield within twenty-four hours, thus establishing the communication. The walls of the opening are generally smooth and there are no necrotic masses. (See figure V). It requires some experience with the operation

upon animals to be able to recognize the proper depth of cauterization. There is no doubt that the method can be readily applied to similar operations upon man.

The results of these experiments, which have extended over a period of two years, seem to indicate that the method of Parker and Kerr is the most practical for end-to-end anastomosis, and that of Capek for lateral anastomosis and gastro-enterostomy.

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THE RESISTANCE OF THE PATIENT.

So far as we can now see, the patient's side of the struggle can be fortified by, First: Conserving every atom of vitality, before, during and after the operation. Second: By building additional vitality. This increase in the natural resistance of the body has been so admirably worked out by the internists in the treatment of tuberculosis, that in every case of infection in which such a course is practicable, I put patients upon the dietetic and hygienic regime used in the treatment of tuberculosis. A subacute or chronic pyogenic infection is just as favorably influenced by this regime as is a tuberculosis infection. Third: The use of vaccines.—GEORGE W. CRILE, in the *Wisconsin Medical Journal*.

ON THE SURGICAL RELATIONS OF THE
INTESTINAL GASES, WITH DEDUC-
TIONS CONCERNING PRE- AND
POST-OPERATIVE TREATMENT.*

BYRON B. DAVIS, M.D.,

OMAHA, NEB.

To avoid one of the most trying post-operative conditions with which the abdominal surgeon has to deal—meteorism, a thorough acquaintance with the physiology of gas production is called for. The literature of the subject, unfortunately, is scanty. Little experimental work has been done. The conclusions of those who have investigated along these lines are decidedly contradictory, and many important questions remain unanswered.

Intestinal gases are very important in the production of regular bowel movements. They stimulate peristalsis and tend to keep the intestines distended, contributing much to the looseness of the ingesta and of the fecal matter. Lacking the normal amount of flatus, the fecal masses would not pass along the intestinal lumen readily and would irritate the mucous lining. We all recognize the important office the flatus fills as an aid to defecation. It furnishes the motor impulse without which easy defecation is impossible.

Fries, speaking of the significance of the intestinal gases, says:—"We can best conjecture and ascribe to them a rôle of usefulness in the scheme of digestion and assimilation of the food, in that this gas mixture may serve as a regulating agency to regulate the growth of micro-organisms in the digestive tract, checking the growth of some, preventing the growth of others, which may find their way into the intestines."

The gases principally found are carbon dioxide, marsh gas, nitrogen, hydrogen and hydrogen sulphide. The various sources of the intestinal gases are summed up by Evans as follows:—"(1), Air swallowed; (2), Gases transferred from or secreted from the blood; (3), Gases arising from the fermentation of food stuffs." Although we are apt to consider the fermentation of food as the only source of the gas, it is likely that the amount furnished by the air swallowed and that secreted from the blood constitute no inconsiderable portion of the total.

Gastric flatulence is thought to be caused frequently by the air swallowed with the food or saliva. In support of this opinion Evans has shown that the nitrogen in the gases of such cases occurs

* Read before the Western Surgical and Gynecological Association, December, 1908.

in about the same proportion as in atmospheric air, and that carbonic acid gas is present in like proportion as the oxygen in the air.

Furthermore, Evans concludes that "the rapid production of intestinal gases after abdominal operation, in peritonitis and gastritis, in hysteria, in certain affections of the lungs and heart, renders the theory of an excretion of gases from the mucous membranes of the intestines exceedingly probable."

Fries, in a series of experiments on his own person, found that the composition of the gas discharged from his rectum was, as follows:—

CO_2 = 10.3 per cent. by volume.

O = 0.7 per cent. by volume.

CH_4 = 29.6 per cent. by volume.

N = 59.4 per cent. by volume.

He believes the large proportion of free nitrogen to be due chiefly to the atmospheric nitrogen swallowed as air with the liquid and solid food and with saliva, the oxygen having been absorbed into the blood or to some extent having been supplied to living organisms in the alimentary canal. That the food ingested is the most important source of the intestinal gases is probable from the fact that, when an exclusively meat diet is used, the proportion of free nitrogen in the rectum is more than three times as great as when a vegetable diet is made use of. It is well known that certain articles of food cause the elaboration of large quantities of gas, while others have the opposite effect.

According to Boas, the amount and kind of gas formed vary with the diet and the segment of bowel. It is formed most rapidly where active fermentative changes occur—*i. e.*, in the upper segment of the small intestine. Less gas is formed in the lower portion of the small intestine and very little in the large bowel. If all the gas formed remained for any length of time in the intestines, painful tympany would quickly result. A certain amount is discharged from the rectum daily. Certain of the gases, notably oxygen, are absorbed into the blood and several investigators (Regnault, Reisert, Tacke, Kuntz and others) have demonstrated the presence of marsh gas and other intestinal gases in the expired air (Boas).

In perfect health there is a definite relationship between the amount of gas produced and the amount eliminated. When, because of a gas-forming diet, an unusually large amount is produced, a correspondingly large amount is passed from the rectum, absorbed into the blood, and eliminated by the lungs. When a diet low in gas-producing quantities is in-

gested, there is a corresponding decrease in the elimination. The balance is maintained and the intestinal canal contains regularly the amount needed to stimulate peristalsis, and to serve mechanically to speed the bowel contents on their way.

If elimination is not quite up to normal, or if gas production is excessive, a note of alarm is sounded by uncomfortable distention. If at this time a cathartic be taken or the amount of ingesta reduced, the normal condition is soon restored.

The rôle which the microorganisms play in the elaboration of gases is little understood, but it is supposed to be an important one. Many physiologists claim that the presence of certain kinds of putrifying as well as other kinds of bacteria are absolutely necessary for continuous good health and normal digestion. If conditions arise inimical to the proper development and activity of these microorganisms, more or less serious results will follow. The bacterial activity is supposed to aid in the production of certain enzymes necessary in normal digestion as well as in the elaboration of gases.

In refutation of the opinions advanced that much of the nitrogen and oxygen (carbonic acid gas) in the alimentary canal result from swallowed air, Evans, in some experiments with fishes, found that the gas present in the sound of the cod, not connected in any way with the intestinal canal or with the external air, and therefore entirely a product of the vascular lining, consisted entirely of oxygen and nitrogen in the proportion of about 15 per cent. of the former to 85 per cent. of the latter. He asserts that we have no right to assume that when we find nitrogen in about the same proportion as it exists in the air, that that nitrogen is the nitrogen of the air. It is thus seen that the views of different observers are sadly at variance.

Nothnagel is of the opinion that by diffusion carbonic acid gas may pass from the bloodvessels of the colon into the intestinal lumen. This would, according to Pick, in a measure explain the sudden occurrence of meteorism after emotional excitement, as it would not be impossible that psychic irritation might influence the vasomotors to such an extent as to favor diffusion.

On the other side, we find Lauder Brunton and Cash, who explain the flatulency of emotional excitement as due to diminished gas resorption by the vessels of the intestinal walls from inhibition of the venous circulation. Their experiments, at least, show that carbonic acid gas and sulphuretted hydrogen, which are soluble in water and in alkaline fluids, are taken up by the blood. It is thus seen

that many questions in the physiology of gas production and elimination are yet unsettled.

A clear understanding of the pathology is manifestly impossible as long as the physiology is unknown. Some experimentation has been undertaken to elucidate the cause and process of abnormal gas formation, but only a few facts have been fully determined.

Normally, as has been said, a balance is maintained between the quantity of gas elaborated and the quantity evacuated. If, for any reason, the production greatly exceeds the elimination, flatulence and distress result. If any obstructive lesion of the bowel or parietic condition of the intestines interfere with the expulsion of the gas from the rectum, or if circulatory or other disturbance of the coats of the intestines retard or stop the absorption of gases, the effect is very serious.

Boas states that, under pathological conditions, the quantity and composition of gases in a given segment will vary from the normal. It will depend on the nature of the contents, the motility of the bowels, and the condition of the circulation.

In estimating the manner in which gas accumulations manifest themselves in the presence of various pathological conditions with which we have to deal, a rather full abstract of the experimental work of Kader will be helpful. He found that in the colic of horses circulatory disturbances were a frequent and important etiological factor. Ninety to ninety-four per cent. of horses suffer from aneurism of the anterior, or, more rarely, the posterior mesenteric arteries and their branches. The aneurisms cause thrombosis and emboli of the various ramifications of these arteries, which lead, unless a sufficient collateral circulation is established, to the following changes: arterial anemia in the excluded area, followed by a venous stasis with serous and hemorrhagic transudation into the intestinal wall and lumen as the result of the lessened blood pressure. This condition leads directly to paralysis of the intestines.

The latter in turn produces stagnation of the intestinal contents with abnormal fermentation and abundant development of gases, and further is the cause of axial torsion and invagination of the intestine because the activity motile healthy portions of intestine wind around the passive portion and become invaginated therein.

Kader produced in dogs, cats, hogs, sheep, rabbits and horses various forms of intestinal occlusion and studied the meteorism in relation to its etiological

factors of production, localization and size. He divided his experiments into four groups:

1. In which the intestinal loop with its mesentery was strangulated.
2. In which a certain portion of the intestine was entirely stenosed at two widely separated points, without injury to the mesenteric vessels.
3. In which circulatory disturbances were occasioned in a section of intestine by ligation of its mesenteric vessels, without in any way affecting the intestinal lumen.
4. In which the lowermost loops of the ileum were subjected to circulatory disturbances by ligation of their mesenteric vessels, as in group three, and by stenosis of the loop at the ileum, immediately above, any influx of intestinal contents from above being prevented.

Results of the first group in which intestinal loop with mesentery was strangulated, a, moderately, b, completely. An almost immediate symptom in moderate strangulation of an intestinal loop is a dark, reddish-blue discoloration, increasing in intensity. It is the result of the venous hyperemia which increases continuously, leading to venous stasis, extravasation of blood from the vessels into the intestinal walls. The latter grow turgescient, become thickened to twice or more their normal thickness, and are firm to the touch. The blood, originally only serum, transudes in great quantities through the mucosa into the lumen of the intestine, gradually liquifying the contents. A few seconds, at the most a few minutes, after strangulation, there occurs a string-of-pearls-like contraction in the strangulated loop. This recedes in a few minutes and from that moment on gradual paralysis continues synchronously with the increase of the venous stasis. Development of gases occurs in the intestinal loop. It becomes distended and tense. Its circumference is almost doubled, in some cases tripled and more, due to development of gas, transudation of serum into the intestinal lumen, and thickening of the walls. All of the above-mentioned symptoms are fully developed within four to eight hour after strangulation. Development of gas occurs in the strangulated loop and becomes intense even when the loop at the time of strangulation contains but little fecal matter, or when as much of it as possible has been removed. Thromboses occur within the first few hours after strangulation. The walls of the loop become inflamed. In the course of time circulation is entirely stopped and gangrene of the loop follows.

The afferent and efferent loops next to the stran-

gulated portion of intestine contract spasmodically a few minutes after strangulation has occurred. They are found in this contracted condition, unchanged in any other way, when the strangulated portion has already undergone the changes above described. The loop immediately above the strangulation begins gradually to become distended with gas. The lower one remains more or less contracted till death. In cases in which strangulation had existed for forty-eight hours the distention in the loop above the strangulation was by no means as great as it was in the strangulated portion within eight hours after strangulation had been produced. Where strangulation had existed for more than two days the loop above was found dilated only in its lower portion. The contractility of the distended intestine above the strangulation was reduced to some extent, but the impairment of the musculature was very slight, as irritation by pinching the gut with forceps was always followed by firm contractions.

Peritonitis existing at the time of strangulation or occurring synchronously seems to inhibit to a marked extent the development of local meteorism of the strangulated gut, but, on the other hand, to further general meteorism.

In the second series (b) of the first group strangulation was complete and the gut immediately assumed a pale and cyanotic hue. Finally it became dark ash-gray to greenish. No transudation into the lumen or into the peritoneal cavity occurs; in the loop of intestine one may find only slight quantities of fluid and rarely bloody contents. The peritoneal cavity contains large quantities of fluid only in the cases in which general peritonitis has set in. The gases distend the incarcerated portion of the gut; the walls become tense, the circumference is increased. All this is quite marked, but not as much so as in the first series of cases. Degeneration and perforation of the intestinal wall occur. Paralysis of the musculature occurs also and more rapidly than in moderate strangulation. At the beginning of complete strangulation spasmodic string-of-pearl-like contractions are more intense than in cases of moderate strangulation but of shorter duration. The loops of intestine above and below the strangulation differed from the same segments in moderate strangulation only in that the contractions set in earlier, were more intense and spasmodic and lasted longer.

Results of the second group in which an intestinal loop has been completely stenosed at two points without impairment of the circulation. In these cases practically no gas production occurred. In

double stenosis of an intestinal loop containing fecal matter gas develops, it is true, but in such small amount that it could not be designated as distention. The contractility of the stenosed gut is but slightly affected, if at all, at the end of forty-eight hours. The circulation does not incur any notable changes. The loop of intestine above the upper stenosis becomes slightly and uniformly distended; this distention is always greater than that of the stenosed, empty or filled loop. The circumference of the upper loop does not increase to twice its normal size, nor does it amount to palpable distention. The portion of the gut below the lower stenosis is usually unchanged; it may be slightly contracted. Double stenosis of an intestinal loop did not prove as acutely deleterious to the life of animals as did strangulation; nor was gas produced in nearly as great quantity.

Results of the third group in which circulatory disturbances were produced by ligation of mesenteric vessels without mechanical impairment of the permeability of the intestine. Simultaneously and parallel with the increase of the circulatory disturbance, venous hyperemia, there appeared decrease of contractility, finally paralysis; thickening and induration of the walls due to transudation of the blood into the intestinal wall; finally gangrene; transudation of the blood into the intestinal lumen and into the abdominal cavity; gas formation. In some of these experiments Kader observed that the transition from unchanged to changed intestine was definitely marked, and this is explained probably, by the experiments made by Litten on dogs, which showed that the superior mesenteric artery comports itself like a terminal artery.

Results of the fourth group in which the ileum was ligated or stenosed at one point only and the mesenterium of the portion of the intestine below the stenosis firmly ligated as in the cases of the third group. It was found that interference with the circulation of an intestinal loop, venous stasis, produced meteorism, even though gas and fecal flux from above are cut off, and when the lower exit is open. Gas production takes place in a section of intestine in which the circulation is considerably impaired, in the absence of larger amounts of fecal masses. Increased quantities of fluids and gas in the lumen, thickening of the wall, loss of contractility, and in fact, all changes in the intestinal loop in which a disturbance of the circulation has been effected, in the sense of a venous stasis, may be primarily traced to these circulatory disturbances as the main, perhaps only, cause.

Kader found in all cases of strangulation of an intestinal loop that gases formed in a few hours. The etiology of the gas-meteorism is the circulatory change or impairment. The presence of intestinal contents in the loop at the time of strangulation influences the quantity of gas production, but is not essential for its production. The experiments of Magendie and Gerardin, as well as those of Tuntz, verify the author's results. According to Magendie and Gerardin there occurs, especially in certain marked, acutely arising cases of meteorism with intestinal occlusion, an exhalation of gases from the blood into the lumen of the intestine.

Tuntz and his pupil, Tacke, assume that in normal conditions from ten to twenty times as much of the intestinal gas is removed through the lungs as per anum. But when there is impairment of the circulation there form in the affected section of gut, gases from putrefaction and decomposition products of the intestinal contents, as usual, but they cannot be resorbed or removed rapidly enough. This gives rise to local massing of gases, local gas-meteorism.

A critical review of cases of intestinal occlusion reported in the literature shows that the distended portions of the intestine presented various grades of development of venous stasis, and the lumen of the intestine contained partly bloody fecal fluid, partly gas. If it is assumed that without strangulation of the mesenteric vessels there can be no circulatory disturbances it would carry one far afield. Kocher showed almost thirty years ago in an article on strangulated hernia, that the circulation in the intestinal wall could be affected by mere distention of the gut without direct involvement and impairment of the vessels of the mesentery, and he has shown in experiments on dogs, that ligation of a section of intestine above and below, and injection of fluids or air produces a marked venous stasis, in the section of gut involved, while the mesentery is in no way affected.

Schmidt states that it is by no means necessary that in abnormal collections of gases in the intestines there must always exist a pathologic increase of intestinal fermentation; if it is present, it is usually not the cause but the result of the stasis. He further asserts that impaired friction of the intestinal musculature, or stagnation of the contents from other causes is the most important and the most common cause of abnormal intestinal gas production. It may be said of the intestine as of the stomach, that pathologic gas formation without disturbance of muscular activity is exceptional.

In paretic conditions the intestine becomes distended and this leads to diminished expulsion of gas, as by the distention the resorption into the bloodvessels is interfered with and the contractility of the intestinal musculature is impaired. Thus occurs, as Nothnagel puts it, a vicious circle, whose primary cause must be sought in muscular weakness.

The apparently contradictory conclusions of different experimenters need not be so confusing if we pin our faith on one primary cause of intestinal meteorism—a failure in resorption of the intestinal gases by the blood, plus a failure of the gas being carried along the intestinal lumen by active peristalsis. This may be brought about by a circulatory disturbance in the mesenteric artery or its branches, or by an occlusion, followed by primary distention and a circulatory disturbance of the vessels of the intestinal wall.

Ortner describes a case of arteriosclerosis of the intestinal vessels, especially of the superior mesenteric artery, in which tympany and pain occurred regularly two or three hours after meals. He attributes this directly to spasm of the intestinal vessels, occurring when the functional requirement of the intestine was increased, causing, because of the diseased condition of the arteries, temporary arrest of the circulation in the vessel area involved resulting in decrease or failure in gas resorption. This same point was recently brought out by Dr. H. L. Aiken in a paper read before the Omaha-Douglas County Medical Society, in which a case was reported with similar symptoms and like conclusions. In the discussion Drs. Bridges and Dunn reported cases of a similar nature.

It is probable that the increased meteorism found in cases of gastropnoia and enteropnoia is due not only to lessened peristaltic power because of a lowered muscular tonus, but to a failure in normal resorption of gases due to diminished circulatory activity because of the elongated mesentery.

The effect of exposure of the abdominal viscera to air, sudden cooling, rough handling, etc., though of great importance in all abdominal work, has seldom been the object of exact experimental research. The crucible of practical experience, the final court of appeal in any surgical question, has been the chief factor in the elucidation of knowledge bearing on this subject.

The work of Cannon and Murphy is of so much interest that it cannot be omitted here. These workers performed experimental sections on cats, first seeking to learn the immediate effect on the movements of the stomach. They fed the cat through a

stomach tube 25 c.cm. of mashed potatoes in which had been mixed 5 grms. of subnitrate of bismuth, in order to ascertain by means of the fluroscope the rapidity with which the food passed out of the stomach and along the intestine. The usual operation was resection of the intestine with end-to-end suture. It was found that in the control animal, one-half hour after the food was administered, quite a quantity had already passed the pyloric orifice. In the animal that had undergone intestinal resection 18 cm. below the pylorus, not any had passed from the stomach at the end of five hours. At the end of six hours some had passed, but not as much as during the first hour after feeding the control animal. This demonstrates complete cessation of peristalsis of the intestines for five hours after resection. During these five hours gastric peristalsis seemed normal but the pyloric sphincter was tightly closed.

The experimenters draw from this a striking lesson on the conservatism of nature. It takes about five or six hours for a gluey exudate to form and to render efficient support to the newly united intestine. "It is certainly very striking that the period of primary repair and the period during which the food is prevented from entering the injured intestine should so closely coincide." (Cannon and Murphy.)

They also found that when the intestinal suture was made near the ileo-cecal valve the food began to leave the stomach in two hours, but it accumulated in the upper segment of the small intestine above the point of suture and none of it entered the large intestine until after seven hours. From this they make the following inference: "It may be that at any point along the alimentary canal injury produces a functional blocking effect which saves the injured part from activity until a certain degree of repair has taken place."

Cannon and Murphy also made experiments on post-operative ileus, an effort being made to find out what factors were most hostile to post-operative intestinal peristalsis. They sought light on the following points: (1) The effect of etherization; (2) The effect of exposure to the air; (3) The effect of cooling; (4) The effect of handling.

(1) *The effect of etherization.*

Etherization was found not to stop the movement of food, but to make its progress from the stomach and along the intestine slower than normal. Normally food was found to reach the large intestine in two to three hours, while in the etherized animal it

took four, five and six hours to pass the same distance.

(2) *The effect of exposure to the air.*

Under ether a long median abdominal incision was made, the borders of the cut being widely retracted, in order to permit the air to come freely into contact with the stomach and small intestines, care being taken not to touch the viscera. As soon as the serosa became dry and ceased to glisten the abdomen was closed. The emptying of the stomach was not much delayed, not so much as after simple etherization, but the food did not reach the large intestine until six hours after it was administered.

(3) *The effect of cooling.*

An incision was made and, in order to cool the serosa without drying it, normal salt solution at a temperature of 20° C. was injected at intervals. The stomach emptied itself only slightly less-quickly than normally and the food reached the large intestine in three hours.

(4) *The effect of handling.*

Four methods of handling were made use of: (a) gently, under normal salt solution; (b) gently in peritoneal cavity; (c) gently, in air; (d) severely, in air. Under the first three conditions no food left the stomach until the end of three hours and the progress along the small intestine was very slow. In only one case did the food reach the large intestine in seven hours. Gentle handling in air produced the greatest amount of slowing, in one case not all of the food having reached the large intestine in 26 hours, while in the control animal this was accomplished in five hours. Thus even gentle manipulation of the stomach and intestines seems to be a more important factor in the production of post-operative intestinal inactivity than etherization alone, exposure to air alone, or cooling alone.

I have found in my clinical work that post-operative tympany and trouble in securing intestinal evacuations have decreased in proportion to the care used in keeping the operating room warm and the exposed coils of intestines protected by pads wrung out of hot normal salt solution. Even the slightest abdominal sections done with equal care in handling, but in a cool operating room and without the protection of hot pads have been followed by a stormy period of tympany and other disagreeable symptoms which accompany this condition.

What to do when much tympany is present before the operation is a matter of a great deal of importance. Can acute-operative treatment decrease the tendency to post-operative tympany? It has been shown in the experiments quoted that one of the

factors in gas-formation is fermentation of the food residue. To obviate trouble from this cause the use of laxatives before operations is wise but it is liable to be overdone. A very brisk cathartic, acting violently, not only clears out the contents of the intestine but exhausts the contractility of its muscular coat. To how great a degree this is true and how long the exhaustion of violent peristalsis lasts, I do not know; but it has been a matter of frequent observation that a lessened peristalsis follows a too brisk catharsis.

Post-operative treatment should be as simple and natural as possible. No starvation, unless the stomach or small intestine is in a condition to prohibit food, but also no forced feeding at first. The weakness which follows denial of all food, and the discomfort and disgust of too much should alike be avoided.

Water given as soon as the patient calls for it has been found greatly to promote comfort and a feeling of well-being. It also seems to encourage post-operative peristalsis. This need for water is natural and its prohibition seems now to have been the refinement of cruelty. The tissues are dry from the preliminary laxatives and loss of blood. Water serves not only to quench thirst but to dilute the anesthetic which collects in the stomach and its early use is humane as well as beneficial.

Something to promote early restoration of peristalsis is of great importance if a patient would pass a comfortable convalescence. For fourteen years I have made a routine use of strychnia hypodermatically after operations, not so much as a heart stimulant as to encourage peristalsis. When it was first made use of it was a matter of frequent remark in the hospital that trouble from post-operative tympany was of rare occurrence.

Of late, cases that give trouble from unusual accumulation of gas have been treated with salicylate of eserine in doses of 1/60 to 1/40 gr. hypodermatically. Its use has been followed often by an early passing of gas and there can be no doubt that it promotes peristalsis to a remarkable degree and is of great use when the tympany is due solely to muscular atony. Vogel also claims that it prevents intestinal adhesions. An absolute contraindication to the use of eserine is mechanical obstruction and it should be avoided just the same as one avoids cathartics when mechanical obstruction is present. When rightly used, eserine is an important advance in the treatment of atonic tympany.

The points that practical surgeons need especially to have in mind are (1) To have as little fermentable substance as possible in the intestines before

operation; (2) to do as little as possible during the operation which will interfere with the normal circulation in the intestinal wall. There should be a minimum amount of handling and resulting trauma. (3) To leave the intestines in the best condition for active peristalsis. Long exposure and much cooling are inimical to active peristalsis.

TWO CASES OF SEPTICEMIA FOLLOWING SUBMUCOUS RESECTION OF THE NASAL SEPTUM; ONE DEATH, ONE RECOVERY.

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NEW YORK CITY.

I wish to report the two following cases, because I believe they present unusual complications.

The submucous resection as performed nowadays, throughout the United States, is considered more or less of a harmless procedure. If any complications have occurred, they have not been reported in the literature. Besides looking up references, I have also made personal inquiries in New York City and each operator has claimed that he has never had such a serious complication as sepsis following a submucous resection.

I find some fifteen references in the literature to abscess of the nasal septum, which is supposed to be a rather rare condition. Most of these cases followed traumatism. Wm. L. Culbert in the *Transactions of the Laryngological, Rhinological and Otological Society*, Vol. 9, reports a case of abscess of the septum with symptoms of septicemia. In the discussion of this case, George L. Richards cites the case of a physician who had an abscess of the septum followed by sepsis. Both cases recovered after incision into the abscess cavity. L. C. Cline, in Vol. 3, of the *Transactions* of this same Society reports the case of a young girl who was treated for typhoid fever for weeks. Subsequently it was determined that she had had some injury to the nose. An abscess of the septum had developed which finally broke down, with subsequent recovery.

The two cases here reported occurred within a period of a few weeks in an experience of some hundreds of cases, either operated upon by myself or by those with whom I am associated.

CASE I.—Margaret M., 18 years of age, stenographer, single. For the preceding two years she had been in such poor health that she had been unable to work. Had had no cough, appetite fair; general lassitude. Had had some obstruction to

nasal respiration. She was told she had adenoids and came to the clinic for adenoidectomy.

The girl was anemic but seemed to be in fairly good physical condition. Examination of the nose showed a deviation of the septum to the right anteriorly, to the left posteriorly. Both middle turbinates were hypertrophied. Examination with the pharyngoscope showed that no adenoids were present. Examination of the throat and larynx, negative. Transillumination, negative.

She was told that an operation on her nose was necessary and she therefore returned to the clinic two days later (May 24th).

The septum was anesthetized with pledgets of cotton saturated with cocain (4%) and adrenalin (1/2000). More thorough anesthetization was accomplished some twenty minutes later with cocain crystals. As the patient seemed to be in such a nervous condition, having intermittent jerky movements, particularly of the right side of the body, I decided to perform the operation in the recumbent position.

The operation itself was particularly easy. There was no traumatism as far as I could ascertain other than the incision in the anterior part of the mucosa. The nares were packed lightly with gauze impregnated with bismuth subnitrate powder. The entire operation consumed less than one-half hour.

The patient returned to the clinic two days later to have the packings removed. She complained of frontal headache, a symptom so often complained of when packings have been in the nose for any length of time. There was only moderate bleeding after the packings were removed. There was considerable edema of the mucoperichondrial flaps and a frothy blood-tinged serous discharge. I told the patient to keep the nose clean with peroxid of hydrogen and to return in two days.

The day she was to return to the clinic, I was informed that for the past forty-eight hours the headache had increased considerably, that her fever had reached 104° F., that she had had a chill lasting a half hour, and that she was so ill that it was impossible for her to leave her bed. I went to see her immediately. The girl was rolling around the bed in the agony of a terrific headache. Her face was drawn with suffering, but at that time there were no external indications of pus infection. The nares seemed to be perfectly clear. Temperature 104.2°, pulse 120, respirations 20. An ice-bag was applied to the head, the nares were irrigated with an alkaline solution from a fountain syringe, the return fluid containing only a small amount of mucous. A large dose of morphine was administered, which gave temporary relief.

I was again sent for the following evening. A decided change for the worse had taken place. The temperature had been remittent and another chill had occurred. There was slight edema of the eyelids on the right side, slight exophthalmos and some swelling of the right side of the face. There was tenderness over both frontal sinuses.

I determined to make an immediate exploration of the nasal cavities. Unfortunately the dry cells

for my head lamp did not give very good illumination. It was impossible to see beyond the swollen and edematous mucous membrane of the septum on either side. I opened up the incision in the septum on the right side. The edges of the wound looked unhealthy and boggy. A thorough exploration was made between the two septal membranes with a Freer periosteal elevator and cotton applicators. I was able to pass the instruments well up toward the cribriform plate. Not a drop of pus was found. I then explored the regions of the middle turbinates with probes and applicators. Only thick tenacious mucous adhered to the applicators.

I naturally suspected a septal abscess which had finally extended to the cavernous sinus. At that time there were symptoms of beginning cavernous sinus thrombosis. I advised the removal of the patient to a hospital immediately. That night she was taken to New York Hospital and placed on Dr. Hartley's service. The following notes were kindly made for me by Dr. Munroe, of the New York Hospital staff.

The ambulance surgeon found the patient's temperature 104°, respirations rapid, right eye more prominent than the left (exophthalmos). There was also a swelling in the region of the right parotid gland. She complained of terrific headache. The neck was somewhat stiff and could not be completely flexed. Kernig's sign slightly positive. No Oppenheim or Babinski phenomenon. Pupillary reflexes equal. Chief complaints, headache, fever, exophthalmos. Blood count, W. B. C., 15,000; polynuclears, 90%. Lumbar puncture—about three drams of slightly turbid fluid removed under some pressure. A smear showed numerous pus cells in large clumps. No organisms. A culture of the fluid was sterile in 48 hours. Temperature the following day 106.2°, pulse 120, respirations 24.

The parents realizing that the patient was dying, took her home. From what I learned from the family physician, the symptoms increased in severity. The exophthalmos and swelling of the right side of the face became greater and he thought that an abscess was present. The patient died eight days after operation, never having lost consciousness until the very end. No autopsy was allowed.

I have no doubt that this was a case of septicemia (probably streptococcemia) associated with a cavernous sinus thrombosis and possibly meningitis. No petechiæ were present on the skin. No blood culture was made. However, the symptoms were so indicative of a general infection that no one who saw the case had any doubt that there were signs of sepsis.

CASE II.—Elizabeth C., twenty years of age, came to the clinic about two weeks later with practically the same history. The history of this case was so like the other and the physical appearance of the girl was so similar that they struck me immediately.

The septum was deviated in its cartilaginous portion, to the right. Both middle turbinates were hypertrophied. The nares were perfectly clean.

The operation itself was a simple procedure, only the cartilaginous septum being removed. The procedure took a little longer than necessary owing to the fact that I was demonstrating the operative technic to post-graduate students. The patient, however, was not in the chair longer than a half hour. Keeping in mind the fact that too tight packing might cause trouble in such a case as this, only the smallest necessary amount was used.

Two days later the girl's mother returned to the clinic to tell me the patient was unable to leave her bed, that she had terrific headache and fever. I immediately went to see her, taking the necessary instruments and headlight. Nothing could be seen except an edematous condition of the mucous membrane of the septum and an unhealthy appearance of the wound. I cleaned the nares as well as possible, prescribed adrenalin and Dobell's solution and fairly large doses of morphine.

I need not enter upon a lengthy account of the next four days. The symptoms were practically the same as in Case I, except that there was no exophthalmos. I was in daily communication with the patient and expected symptoms of cavernous sinus thrombosis to occur at any moment. I finally decided that nothing could help her unless I found the focus of infection; for I had no doubt an abscess was present somewhere in the nose. On the sixth day I had Dr. Heiman administer chloroform and I carefully explored the nasal chambers. Adrenalin was first applied to the mucosa and then, after the engorgement had somewhat subsided, I opened up the submucous incision. The space between the mucous flaps was dilated with a Killian speculum. No pus was found. As I had about given up hope of finding anything, my elevator broke through into a pocket of pus well up above the middle turbinates. About one-half dram, I should judge, of thick ropy pus escaped. A counter incision was made in the mucosa on the left side and two cotton drains inserted on the right side, one in the septal wound and one on the floor of the nose. These were removed in twelve hours and the nose irrigated with peroxide of hydrogen.

As soon as the patient awoke from the anesthesia, she felt better. The temperature fell to normal and remained normal. An immediate recovery took place. A week later, an examination in my office showed a healed wound in the septum and a healthy condition of all the nasal mucous membranes.

I attribute the quick recovery in this second case to a number of factors. First, the supportive treatment employed in cases of sepsis was employed here. This consisted in giving the patient large quantities of water, food small in amount, at frequent intervals, mainly in the form of milk and buttermilk and lastly, large doses of morphine and codein, as much as a half grain of the former twice a day and a grain of the latter every two to three hours. Alcohol sponges were used to reduce the temperature. The patient could not take whiskey

and no other stimulants than those enumerated above were given.

There are many points of similarity in these two cases. They were young girls of about the same age, and of the same build, both of Irish descent, both stenographers and both had felt too miserable to work for two years. Both were unusually bright and well educated. Both had a simple submucous resection performed. Both presented symptoms of septicemia. I have no doubt that the second case would have ended fatally if the pus focus had not been found. Moreover, I cannot help feeling that the first case might have recovered if a more thorough exploration under anesthesia had been made.

In reference to Case I, the question has come to my mind how an abscess occurring between the septal flaps could cause a cavernous sinus thrombosis. In studying the lymphatic and blood supply of the upper portion of the septum, I find that there are intercommunicating branches between the arteries and veins of the septum, and the arteries communicating with the cavernous sinus. The ophthalmic artery supplies the roof of the nose. Some of the veins accompany the ethmoidal arteries and terminate in the ophthalmic vein. A few veins communicate with the interior of the skull through the cribriform plate of the ethmoid and the foramen cecum. The ophthalmic vein empties into the cavernous sinus through the sphenoidal fissure. Some of the lymphatics communicate with the subdural space. The venous return of the upper portion of the septum may be grouped into four sets: 1. An anterior set of veins which communicate with the anterior ethmoidal veins and a vein to the subdural space through the foramen cecum in the crista galli. 2. A middle set which communicates with the veins of the subdural space through the cribriform plate. 3. A posterior set which drains the postero-superior portion of the septum and communicates with the posterior ethmoidal veins. 4. An indefinite plexus of veins which communicate with the sphenopalatine veins and the veins lower down on the septum which empty into veins on the floor of the nose.

11 WEST 91ST STREET.

BEFORE OPERATIONS.

Much harm is being done by starving patients and giving them heroic doses of cathartics before operation. An operation of sufficient importance to require any preparatory treatment is a trying ordeal for the patient, and should be prepared for as for any other trial of endurance.—EDMUND D. CLARK in the *Indianapolis Medical Journal*.

SPOON ENUCLEATION OF THE TONSIL.

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The value of any tonsillar operation consists in the thoroughness of the enucleation. No tonsil operation should be considered thorough, unless the capsule be included in the enucleation. The question of hemorrhage is usually what alarms most operators, but if the tonsil is removed with the capsule intact, it is my experience—regardless of the teaching of other operators—that bleeding instantly stops. That we occasionally have a stubborn hemorrhage of the oozing variety, is probably due to the fact that the tonsil capsule is composed of fibrous tissue. Fibrous tissue, as we well know, does not possess a great deal of contractility. Existing between the carotid side of the capsule and the superior constrictor muscle there is a varying amount of connective tissue, this possessing a greater amount of contractility than the capsule itself. Consequently, when a tonsil has been enucleated and part of the capsule remains we lose this contractile power, which is necessary for the closure of the bloodvessels and prevents hemorrhage when no injury has been inflicted upon either the anterior or the posterior pillars. When bleeding continues it is fair to assume that some portion of the tonsillar capsule remains, for these arteries pierce this capsule and ramify through the tonsil. Hemorrhage might also take place if in the enucleation some fibers of the superior constrictor muscle may have been brought away as well. This can be readily obviated by the use of the instrument which I have devised.

Secondary hemorrhage is practically unknown if the above details have been carried out. I believe if the anatomy were better understood we would not have any amputations or punching of this tonsillar tissue. At its best, part of the capsule still remains and the added danger of injury to the superior constrictor ensues. Using the various punches it is almost impossible to empty the supra-tonsillar fossa, where 90 per cent. of the abscesses occur. While it is generally conceded that a clean-cut surface will heal more quickly and is less liable to infection, it has not been my experience when using the tonsil spoon, to have had any infection nor to have the healing process delayed beyond a period of about ten days. I do not deem it necessary to massage this fossa during the period of healing, as suggested by Pyncheon, because a certain amount of irritation is thereby caused, and

exuberant granulations, are liable to spring up, necessitating their removal. Careful cleansing with an alkaline wash, followed by a silver salt solution, constitutes the only treatment that is necessary after enucleation of the tonsil in the intact capsule. True it is there are some cases in which this fossa does not fill with connective tissue under four or five weeks, but these are the exceptions and not the rule.

The methods by which enucleation may be done



are numerous and vary with each operator, and he may have some special device of his own which seems to suit his method. The danger of using a knife in the separation of the pillars and the extirpation of a tonsil is such that only when we have an extremely tranquil patient and are exceedingly dexterous with the scalpel are we justified in using it. While the advocates of the knife use the blunt end to separate the tonsil from the connective tissue, using the sharp portion only to separate the pillars, by means of my spoon, the pillars are separated as well as the tonsil. This method can be used only by a very few.

The method of removing with the finger is undoubtedly the best, producing the least trauma, and least apt to cause injury to the surrounding parts, and undoubtedly it is as quick as any method. Ether is generally necessary for such cases, but there are some patients who object to a general

anesthetic for this purpose. While I have enucleated a number of tonsils under cocaine by my finger the patient usually gags and retches to such an extent that the time of removal is lengthened and the possibility of injury to surrounding parts is increased.

With the idea of overcoming this I have devised the spoon shown in the cut, by which the tonsil is removed with the capsule intact, with a minimum amount of loss of blood, and leaving a fossa which readily heals in a period of a week to ten days. A 10 per cent. cocaine solution with adrenalin, is injected at two points between the anterior pillars and the tonsillar capsule, and at two points between the posterior pillars and the tonsillar capsule, correspondingly with that made anteriorly. An ordinary hypodermatic, or, preferably, a Luer glass syringe is used, but a special gold needle four inches long is attached, which allows a deep penetration. A lapse of five minutes is allowed so that anesthesia becomes complete. The tonsil is then grasped, well into the supratonsillar and the intratonsillar fossæ so as to engage the capsule as well as the tonsil. Otherwise we might grasp the tonsillar tissue, which is soft and readily tears out. I believe this is the point wherein failures are often made in enucleation. A tongue depressor is, not necessary, the handle of the volsellum taking its place. The spoon is then entered between the posterior pillars and the tonsillar capsule and made to rapidly separate from below upward to the supratonsillar fossa. The spoon is then moved rapidly forward, separating the tonsil as it comes forward from the connective tissue beneath. The same process is carried out inferiorly and anteriorly. This spoon has semi-sharp edges which act better as a separator on the connective tissue than a sharp instrument would do, without running the risk of leaving some of the capsule. The spoon fits so accurately over the tonsil that injury to the pillars need not be considered. The extreme traction by means of the volsellum brings the tonsils so well forward into the pharynx that it makes very little separation necessary. The many changes that were necessary to make this spoon of practical value are due to the efforts of F. A. Hardy & Co.

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APPENDICITIS.

When the patient is in a condition of profound sepsis and when the additional manipulation and duration of anesthesia would jeopardize life, the establishment of free drainage through a suprapubic opening with the slightest possible manipulation is the safer plan.—HOWARD R. CHISLETT in *The Clinic*.

TRACHEOTOMY FOR FOREIGN BODIES IN THE AIR PASSAGES; BASED UPON FIFTY-THREE SUCCESSFUL CASES.

W. F. WESTMORELAND, M.D.,

ATLANTA, GA.

The courtesy of many throat specialists in my section in referring their tracheotomy cases to me, has given me an extended experience in this work. This paper is limited to the discussion of tracheotomy for foreign bodies in the trachea or bronchi of children. My interest in this subject was stimulated by my study of a case that I was detailed to watch in my early medical days. In that case the usual routine of the time was carried out. The foreign body, a pawpaw seed, not being expelled at the time the trachea was opened, a tracheotomy tube was inserted a few minutes later. To prevent the child being choked by the mucus or seed in the absence of the surgeon, my duty was to keep the tube clear of mucus.

It took only a short time to convince me that the tube was disturbing both the patient and myself, was blocking the escape of both mucus and seed, and was a continual source of local irritation. Contrary to instructions, I removed the tube. In a short time the patient had coughed up a lot of mucus and the seed also.

I found the literature of this subject unsatisfactory, unscientific, and chaotic, practically ignoring all ideas of modern wound treatment; filled with directions that were ambiguous and absurd, a worthless heritage brought forward from period to period and preserved without rhyme or reason. Many surgeons, however, were making a stand for immediate operation; Goss voiced their sentiments; my father had for years taught the same.

Weist, in a study of a thousand cases, arrived at the following conclusions, which voiced the majority opinion: The presence of a foreign body in the air passages does not make bronchotomy necessary, nor should it be performed unless it causes dangerous symptoms, ignoring the fact that mortality increases with the passing moment.

How do these patients die? They choke to death or die of preventable infection. In Weist's table there were 937 cases with 232 deaths; 103 from asphyxia, 121 from infection, and 8 from hemorrhage. These are surgical cases and immediate surgical interference is indicated. The immediate danger is asphyxia; and prompt aseptic operation practically eliminates all danger of infection. Any appreciable mortality from hemorrhage is an

evidence of the operator's lack of skill. Irritation as a cause of subsequent infection will be considered later.

A word concerning the anatomy of this region, in which there are many anomalies, especially of the bloodvessels. An interesting and instructive article on these anomalies is that of Dr. Pilcher. The anatomy of this region is so loosely described in our anatomical and surgical text-books that those without practical experience or special study have no adequate knowledge or proper appreciation of the relative size of the organs involved, or the character and size of the space within the limits of which the operation is made; and I think it is due to this lack of knowledge that so many serious accidents, frequently in the hands of skilful men, have occurred. Their idea of the anatomy remains influenced by that studied in the adult cadaver.

Usually about five or six tracheal rings, rarely as many as eight, extend above the sternum. While the distance between the cricoid cartilage and the sternum varies greatly, the average full distance in a child one and one-half to two years old is: length $1\frac{1}{4}$ inches, diameter $\frac{1}{6}$ inch; between three and five years, length $1\frac{1}{2}$ inches, diameter $\frac{1}{4}$ inch; between six and eight years, length 2 inches, diameter $\frac{1}{3}$ inch; between eight and ten years, length $2\frac{1}{4}$ inches, diameter $\frac{1}{3}$ inch.

In 937 cases 712 were under ten and 474 under five years of age, so that practically three fourths of the operations will be upon a trachea considerably smaller in circumference than a lead pencil and within a length of about an inch, and this crossed by vessels and also the isthmus of the thyroid. A proper appreciation of this will prevent such accidents as cutting through the trachea, or missing it entirely.

A general anesthetic, the one the surgeon is accustomed to, should be used, carrying it only to the point of quieting; there is no pain in this region after the skin incision. No operation except that of opening the trachea in the upper portion should be considered for a moment; all others are impractical and dangerous.

Tracheotomy tubes have no place in this operation; they prevent the escape of mucus and foreign bodies and cause irritation. The trachea remains patent enough for all purposes without any assistance. I never use anything. If additional security is wished, a silk thread passed through each edge of the tracheal incision, looped and knotted, gives perfect control of the trachea.

In the young the thyroid isthmus is usually in the way; it should be held with the forceps, cut and

ligated. I stitch in the ligature to prevent its slipping. In very young stout children the thymus gland may infringe on the working space, and when there is a deep receding trachea it may be very inconvenient. Depress it with a narrow retractor; do not use a tenaculum as any injury to it may produce troublesome hemorrhage.

After the fascia is cut, the longitudinal vessels can frequently be pressed aside; crossing, transverse, or anomalous vessels must be cut and ligated when in the way. The small veins may bleed profusely under the influence of venous congestion produced by difficult respiration, but they collapse and cease to bleed when air reaches the lung freely. I make it a rule to ligate all vessels, veins as well as arteries, as they are cut, and keep the incision dry and free from forceps. A dry wound is a great safeguard if, as occasionally occurs, great haste becomes necessary. The weight of the dragging forceps or any pressure on the trachea will sometimes stop the breathing; this should be remembered and guarded against.

Probably the greatest danger during the operation is asphyxia from fixation of the foreign body in the glottis. This complication probably rattles operators more frequently than any other that occurs in surgery and is the cause of most of the operative accidents. If the operator does not lose his head, he has two or three minutes in which to finish his operation and still resuscitate his patient.

I have had five experiences of this kind. My plan is to finish rapidly, holding the vessels with forceps, open the trachea and insert a female catheter, and by blowing into it distend the lungs; this as an aid to artificial respiration rapidly brings the patient around. The absurdity of such directions as inverting and shaking the patients, slapping them on the back and chest and thus losing valuable time is apparent.

The usual suggestions to grasp the trachea between thumb and fingers of the left hand to steady it and make it prominent is, I think, bad teaching. The compression necessary to accomplish this is apt to displace the skin; bulging it presses the vessels into the line of incision, and makes more difficult the already impaired breathing. A better plan is to place the pulp of the thumb on the skin just above the cricoid cartilage and make gentle traction upward; this steadies the skin for the downward stroke of the knife in making the incision.

A rather heavy scalpel, blade English shape, with razor edge, is the best knife to use. This character of knife does not require much pressure force in its use, and held as a violin bow is held, cutting with a

light, free-hand movement, rapid clean dissecting is accomplished without danger of the incisions being uneven in depth, and it exposes vessels without cutting through them. When the trachea is reached open by an incision beginning at the lower margin of the first ring.

The length of the incision should be determined by the size and character of the foreign body. If the opening is sufficiently large, the foreign body is easily expelled by respiratory effort; usually the opening is too small, and the trachea is injured by the forcible and difficult extraction of the body with forceps.

When the trachea is opened, anesthesia is suspended. In the majority of cases, the foreign body is blown into, or out of the opening within a few minutes after the trachea is opened. An accumulation of mucus is usually expelled at the same time. If the foreign body is not expelled at once, the patient is allowed to come from under the influence of the anesthetic, and the posterior wall of the trachea is tickled with a blunt probe in order to excite a paroxysm of coughing.

The foreign body is rarely impacted in any of the bronchi, but usually retained in a mass of viscid mucus, and is coughed up and expelled with the mucus. If it is not, the tracheal wound is left open until it is expelled. No further attempt is made to hasten its expulsion nor are any instruments introduced into the trachea for this purpose; an exception might be necessary in dealing with beans or like substances that would swell when influenced by moisture.

The use of probes or forceps or tracheotomy tubes, simply by their mechanical presence adds to the irritation and increase the danger of infection. I cannot too emphatically condemn the use of the tracheotomy tube in these cases. Why most surgeons continue to advocate their use I cannot understand. They prevent the escape of the foreign body which would otherwise occur, and by their filthy condition pave the way for a septic pneumonia. After opening the trachea, I divide these cases into three different classes. The management of each particular case will depend largely upon which of these classes it belongs to.

The first two classes are those in which the foreign body has been expelled at the time of the operation. The first class is of those cases in which the trachea can be closed at once. In these cases there has not been sufficient irritation or infection to produce pathological changes in the mucous membrane of the air passages. In closing the wound I

use a small, round, half-curved needle with a piercing, not cutting, point, and fine silk sutures. Fine silk is used for both sutures and ligatures. The tracheal incision is closed by interrupted mattress sutures, which are passed through the membrane enclosing the trachea itself. It should never include the mucous membrane. When the fascia is closely adherent to the trachea it is also included in the suture. This is the most important suture and should make the tracheal incision air-tight. After these sutures are placed, I fill the wound with saline solution and gently close the mouth and nostrils of the patient with my hand to see whether forced respiration will force air bubbles through the incision and overlying solution. If no bubbles are seen the incision is air-tight. If it is not, a few additional interrupted sutures will make it so. The fascia, muscles, and the isthmus of the thyroid gland are next sutured; then the skin incision is closed by a continuous suture. A surgical dressing is then applied and held in place by adhesive strips.

The second class is of those cases in which, though the foreign body is expelled promptly, the irritation, with subsequent infection and its accompanying accumulation of mucus, indicate drainage for a while. In these cases the whole incision is left patent for a while and the wound is dressed with a handful of loose bichloride of mercury gauze, held in position by adhesive strips. This dressing will prevent the direct introduction of cold dry air into the trachea, but will still admit the mucus that does not easily escape through the mouth being coughed through the opening into the dressing. The gauze should be changed frequently. Where the wound and trachea are protected in this way from the air, and the mucus promptly escapes, inflammatory symptoms quickly subside.

The third class of cases is of those in which the foreign body is not expelled at the time of the operation, in which infection and inflammatory changes have occurred. These cases are dressed in the same way as those of the second class, until the foreign body escapes and the inflammation subsides. The loose gauze dressing does not prevent the expulsion of the foreign body.

In both the second and third class of cases, when the foreign body escapes and the inflammatory symptoms subside, the patient is anesthetized and the wound closed and dressed as in the first class. Early in my experience with these cases I thought it necessary to exercise some control over the trachea; in other words, to keep it patent; and I used to use the looped and knotted sutures through the tracheal incision as already mentioned. But I

found them unnecessary and now I use nothing and let the trachea take care of itself.

The symptoms of foreign bodies may be divided for convenience into three stages: (1) obstructive symptoms immediately following the accident; (2) irritation produced by its presence; (3) inflammation at a later period. Of course, there are no distinct dividing lines between these stages. In the first stage the patient may die from asphyxia due to the size of the object, or a trivial object may be caught in the glottis and produce a fatal spasm. This spasm occurred in a patient of mine from a small piece of membrane from a raw peanut, during the operation, and he never breathed again until the trachea was opened and artificial respiration was performed.

If the object is irregular in shape or has sharp or rough edges, the stage of irritation rapidly supervenes, and by the mechanical injury to the delicate mucous membrane it opens a pathway for infection and inflammation, and the pneumococci, usually present in the upper air passages, find a ready soil for their propagation.

The successful issue in the 53 cases I have operated upon, though representing many varieties of foreign bodies and seen in the various stages of inflammation, has been due to prompt surgical principles without meddlesome interference. Each of these patients has been operated upon in the shortest time possible after seeing them; sometimes by candle light under exceptionally bad environment.

HEMATURIA IN RENAL CALCULUS.

Blood in the urine is a most important symptom. The blood may only be found during the attack of renal colic or it may be present in small quantity constantly. In this connection it must not be forgotten that blood corpuscles may be found in the urine during an attack of appendicitis. The mere presence of blood in the urine does not signify renal or ureteral calculi, since it may occur in tumors, in tuberculosis of the kidney or bladder and in the so-called essential hematuria of the kidney, as well as in certain forms of nephritis, especially those of an interstitial type. The older tests which attempted to differentiate between vesical and renal sources of the blood by the condition of the red corpuscles and by the fact that the blood appeared at a certain period of the act of urination can no longer be relied on. The use of the cystoscope is the most reliable mode of diagnosis and will soon tell us, in the majority of cases, whether the blood is of vesical or renal origin.—D. N. EISENDRATH in *The Southern Medical Journal*.

TREATMENT OF ECLAMPSIA.*

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The prophylactic treatment of eclampsia should be instituted as soon as any of the prodromic symptoms of auto-intoxication are present. In this connection I wish to digress from the subject of the paper to say that it is the duty of every physician to try to impress upon the minds of those applying to him for obstetric care, the necessity of promptly reporting any and all symptoms of ill health, and not to be satisfied with an occasional urinary examination for albumen only.

By this means, many cases of mild intoxication may be detected and, by suitable means, the more profound poisoning prevented.

As soon as symptoms denoting the existence of auto-intoxication, such as cephalgia, which is tenacious, and most marked in the morning; vomiting; insomnia; malaise; vertigo; epigastric pain, disturbance of vision, and edema of the anterior tibial region and of the hands and face, are present, absolute rest in bed, freedom from all mental care and worry and a liberal supply of oxygen are of utmost importance. The diet should consist essentially of milk, varied with buttermilk, malted milk, crackers and well cooked cereals. In the event of pernicious vomiting, rectal feeding should be instituted for a short time.

Hot colonic irrigations every six hours either with the Kemp or long rubber tube are of value; as is the augmentation of cutaneous elimination produced by warm baths and the maintenance of an even temperature.

Nitroglycerine is used to reduce arterial tension and to facilitate elimination; also tincture of strophanthus in event of cardiac weakness with rapid feeble pulse. Citrate of caffeine is of value for the same purposes. An occasional dose of calomel followed by a saline or castor oil is indicated for hepatic congestion and to insure emptying of the intestinal tract.

When patients fail to show signs of improvement and the toxic symptoms become more pronounced under the foregoing treatment we are then left but one alternative, namely, the emptying of the uterus. This last statement is made with the knowledge that objections will be raised by some, on the ground that it conflicts with their religious belief

* Read before the Long Island Medical Society, January 5th, 1909.

and teaching. To those I would only say that their own consciences should be their guides.

We will now pass on to the consideration of antepartum eclamptic convulsions and to understand the treatment better, these cases are best divided into two classes.

First, those women who are large, plethoric, cyanotic and with high tension pulse; they require venesection or the hypodermatic administration of veratrum viride, either the fluid extract or Norwood's tincture in 20 minim doses repeated at short enough intervals to reduce the pulse to 60.

The second class includes the thin and anemic women with low tension pulse, for whom nitroglycerine and morphine hypodermatically are the drugs. The convulsions should be controlled by chloroform inhalation, and care taken that the tongue is not mutilated. For this purpose the method of Farnier is the best. It consists in taking a small towel or piece of cloth, stretching it between the hands and placing it against the extended tongue, pushing it backward into the mouth behind the dental arch. When the teeth close spasmodically they are prevented by the towel from coming into apposition.

The bowels should be unloaded by enema and one drop of ol. tigllii in a drachm of olive oil placed on the back of the tongue. No time should be lost in evacuation of the uterus in either class of cases, as by this means the convulsions in the majority of cases are terminated. The method to be pursued depends upon several factors—size of bony canal, condition of cervix, and viability or non-viability of the fetus, as well as upon the condition of the woman. When we are fortunate enough to find a canal of ample size and the cervix soft and dilatable, we then have only to decide whether it should be manual or bag dilatation and delivery of the fetus by version or forceps for the viable and the small non-viable. For the purpose of minimizing the amount of traumatism to the maternal soft parts, craniotomy is the best method of delivery of a large dead fetus.

Unfortunately, eclampsia occurs very frequently in the primipara with a small vagina, and a long, hard, rigid and undilatable cervix. It is in this class of cases that the obstetrician of to-day is especially interested, as the vaginal Cesarean section of Dührssen has proved itself a surgical procedure of merit. It has the advantage of being rapid and produces less shock and traumatism to the patient than by any other method of delivery that can be used in this class of cases.

Essentially a hospital operation, it should be undertaken only by one familiar with operative work; and requires the proper instrument and ample assistance. Under chloroform-oxygen anesthesia, with vulva and vagina prepared, a weighted speculum is introduced. After the anterior lip of the cervix is grasped by tenacula, one on either side and brought down the T-incision of Webster is then made in the anterior vaginal wall and the bladder is separated and pushed up, care being taken that it is separated well off on both sides. By the use of the Pryor towel retractor, the bladder is held well up out of harm's way. Traction sutures now replace the tenacula and serve the double purpose of tractors and anatomical guides for use after delivery when the sutures are being introduced. If the tenacula are allowed to remain on they are likely to be very much in the way during delivery, and if they are then removed hurriedly, there is no guide left for bringing together the opposite parts. With straight, heavy scissors the anterior uterine wall is then incised from the external os to a sufficient distance above the internal os to allow of ample space for rapid delivery. The height of the incision depends, of course, upon the size of the fetus; which estimate is made at the time. Valuable time is lost in trying to deliver through too small an incision.

It is well to introduce traction sutures at the level of the internal os at the time of cutting through that portion of the uterus, as they are of great service when, after delivery, it is necessary to introduce sutures into the uppermost angle of the incision, which is difficult without this help. Delivery is done by craniotomy and the basiotribe when the fetus is well developed and not living, or by version if it is viable. When the fetus is large and viable and the vagina small, delivery may be facilitated and laceration of the perineum prevented by right-sided or double episiotomy. Immediately after delivery of the placenta, the uterus is packed with gauze. The uterine muscularis is brought together with interrupted No. 2 chromic gut sutures at half inch intervals, care being taken that they go down to, but do not include the mucous membrane. Tight closure of the external os is not desirable as it may interfere with proper drainage.

The vaginal incision is then closed, leaving a small opening for drainage of the utero-vesical space; the drain in this location is to remain in for from 12 to 24 hours; the uterine gauze to be removed when the suturing is completed; and then the patient is returned to bed in the Fowler position.

The entire operation can be done in thirty min-

utes or less and the amount of blood loss is less than in an average normal labor. Oxygen is administered and the patient frequently returns to consciousness after coming out of the anesthetic. In considering the post-operative care of these patients I would first say that ergot is contraindicated.

It is necessary to bear in mind the two types previously mentioned, namely, the plethoric, cyanotic, high tension pulse patient and the anemic low tension case.

In the former, veratrum hypodermatically to keep the pulse down to sixty, the dosage required depending upon the individual case. It was a long time before I learned what constituted a sufficiently reduced pulse tension from the use of veratrum in eclampsia. A tension that is lowered enough in eclampsia would fill one with alarm in any other condition.

Thin, anemic, low tension pulse patients do well with nitroglycerine, citrate of caffein, intravenous saline infusion and hypodermatoclysis. Hot packs, dry cups, hot water bags, sinapisms, and hot poultices are useful in stimulating kidney and cutaneous elimination. Calomel gr. i on the tongue every hour for ten doses, and increasing quantities of water by mouth as nausea disappears, should be allowed. Chloral hydrate in drachm doses by rectum may be used to diminish spasm and control restlessness.

Oxygen started when the chloroform is given and continued after delivery is of great advantage. I am of the opinion that the beneficial effects of oxygen in eclampsia is often disregarded.

In closing I wish to report the following case:

Mrs. S., age 37, born in Ireland, primipara, admitted to the M. E. Hospital, 3:30 A. M., October 10, 1908. Family history negative. Had scarlet fever and diphtheria in childhood. Menstruated at 14; 28-day type, no pain. Married two years, one miscarriage at two months, one year before present illness. She became pregnant in May and had considerable vomiting, constipation and slight headache from early pregnancy.

On October 9th, after feeling very miserable all day she suddenly, in the evening, become unconscious and had one convulsion before the ambulance was sent for, which was followed by three more in an hour, comatose in the interval.

A specimen of urine, secured by catheter "boiled solid"; heart, negative; a few crepitant râles heard over the chest posteriorly. Tongue lacerated and bleeding. Edema pronounced over the entire body. Uterus about 10 c.m. above symphysis, well contracted and tense. Upon vaginal examination the cervix was found to be long, firm, rigid and undilatable.

I performed a vaginal Cesarean section under chloroform anesthesia and delivered a dead fetus by version.

There were no post-partum convulsions but complete consciousness was not restored for twenty-four hours.

The post-operative treatment consisted in nothing by mouth, but water and calomel, gr. i., dry on the tongue every hour for ten doses; external heat, hot packs, hot rectal irrigation, sinapisms and cups over the kidneys. Fluid extract veratrum, 10 minims every two hours, to keep pulse at 60. Oxygen given freely and chloral hydrate 3ss by rectum every three hours, when necessary for restlessness. The Fowler position was used and the vaginal drain removed at the end of twenty-four hours. Milk and lime water allowed on the second day and cereals on the third. Basham's mixture prescribed on the sixth day. The patient was out of bed in a chair on the seventeenth day. She was discharged five days later, at which time there was good union of the suture lines and the uterus was well contracted and anteфлекed.

At a subsequent examination, six weeks after operation, a fine line of union of all incisions was found; the only irregularity being a small dimple in the anterior cervical lip. The patient had regained her usual health. The urine contained a very faint trace of albumen, 5.50 gr. of urea to the ounce, and no casts.

63 SEVENTH AVENUE.

A NEW METHOD OF APPLYING THE MURPHY BUTTON IN INTESTINAL ANASTOMOSIS.

The operation proceeds in the usual way except that no purse-string sutures are used. When the mesentery has been tied off and the cut ends of the intestine are ready for the reception of the divided button an assistant introduces one half into the lumen of the gut, holding it with an artery forceps, and with his free hand draws the intestine up on the button; a rubber band is then either passed over the artery forceps and snapped upon the button and intestine at about the point at which the purse-string suture is usually introduced, or the rubber band is cut and thrown around the button and intestine at the same point and tied snugly with a square knot. I make use of this little device because, before using it, I found that the introduction of the purse-string suture required some time, and not infrequently, when all was ready for the tightening of this suture, the silk would bind and refuse to pucker the intestine about the button and occasionally it would break and cause annoying delay while the suture was being replaced. I believe the use of the rubber band has another advantage in that the constant pressure which it makes certainly tends to free the button from the point of union when its work is done. The time saved is appreciable.—ALEXANDER NICOLL in the *New York Medical Journal*.

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, NOVEMBER, 1909.

GASTRIC DIAGNOSIS AND THE TEST MEAL.

In recent years the test meal has been losing much of its importance in gastric diagnosis and especially has there been a growing distrust of its findings in the differentiation of cancer from other diseases of the stomach. One need seek no better expression of the real value of the test meal and no more authoritative warning of its unreliability as a diagnostic measure when taken alone than the article by Christopher Graham and Donald Guthrie, in the *N. Y. Medical Journal*, September 4, 1909. Uttered from St. Mary's Hospital, Rochester, Minn., where so much material is furnished for test meal observations and where so many of the cases were immediately followed by operation, the statements of these observers leave no room for doubt.

In their report Graham and Guthrie summarize the gastric findings in 250 cases of ulcer of the stomach and duodenum and 150 cases of carcinoma, which have all come to operation and the correctness of the diagnosis established; 100 cases of pyloric spasm due to appendicitis or gall-bladder disease; 100 cases of stomach neurosis; and 25 cases of pernicious anemia.

These summaries present a striking contrast to the stereotyped text-book teachings. Three-fourths of the patients operated upon for gastric ulcer did not show high gastric acidity. Especially was this true of older patients with chronic ulcer. Young subjects with developing ulcers showed high acid

percentages. Of the 150 cases of gastric cancer free hydrochloric acid was absent in only 80, lactic acid was present in but 64, and food remnants in 63. To turn from figures to comments, it is seen that while free hydrochloric acid is rarely present with advanced gastric carcinoma, in the earlier cases the test meal may avail us little or nothing. Decided food remnants are of greater significance as a surgical indication than the acid percentages. On the other hand, there are a few cases in which the subjective symptoms are indefinite, and where the test meal throws the first light upon the real pathological condition present." And so gastric analysis, like so many other of our chemical tests must not be relied upon to the exclusion of clinical factors, but is to be accepted only in connection with careful anamnesis and physical examination.

Especially is it important to remember that in early cancer of the stomach, the test-meal findings, like the other classical signs, may fail to definitely corroborate a nevertheless reasonable suspicion; and that operation should not be postponed until that suspicion can be replaced by certainty. When the diagnosis is beyond doubt the patient is beyond cure.—W. M. B.

JOINT TUBERCULOSIS.

In a highly suggestive paper, Leonard Ely (*Medical Record*, October 2, 1909), reports observations based on a clinical and pathological study of 45 specimens of resected joints. In the first place, it is interesting to note that of the ten cases in which no tuberculosis was present, nine were clinically diagnosed as such, in an appreciable number, by men of much ability. On the other hand, four joints proved to be tuberculous on pathological examination, although the clinical diagnosis was otherwise. These two observations arouse justifiable skepticism in Ely's mind concerning reported statistics of tuberculous joints cured by conservative measures, and also lead him to be far more guarded and painstaking in the diagnosis of joint tuberculosis than he was before.

Another interesting observation derived from this study is the comparatively large proportion of primary synovial tuberculosis (four out of fifteen cases in which the origin of the process could be traced), particularly in the light of Nichols' work in 1898, which had led American orthopedic surgeons to regard all cases of joint tuberculosis as of bony origin.

The microscopical study affords a most striking revelation of the efforts of nature to heal the diseased process by depriving the joint of motion; in other words, by converting the joint into a synos-

tosis. This observation has deepened Ely's conviction that the best way to cure a tuberculous joint is by immobilization. He, therefore, does not approve of the efforts of many surgeons to preserve motion in the treatment of tuberculous joints. In accordance with this view, he believes that the method of treating tuberculosis of the hip or knee by the plaster of Paris bandage is better than the older method with stiling and traction splints. On the other hand, he holds that the advice of many surgeons to "go wide of the disease" in the performance of joint resections, should not be heeded too zealously. Such foci as may be left behind, heal spontaneously in the majority of instances, if the joint is firmly immobilized.

Ely's studies, especially from a clinical aspect, also tend to disturb the widespread notion that patients afflicted with a tuberculosis joint are short lived. On the contrary, the cases that have been followed show a low percentage of mortality, as shown by the fact that only two of the adult patients have died. Finally, Ely expresses himself emphatically concerning the utter inutility of the operation of curettage as usually practiced.

This study affords a striking illustration of the value of testing one's knowledge of clinical phenomena by the touchstone of morbid pathology. Inasmuch as this is merely a preliminary report, we await amplification of its writer's deductions with considerable interest.

E. M.

ANNOUNCEMENT!—

THE PHILADELPHIA NUMBER OF THE AMERICAN JOURNAL OF SURGERY.

The cordial reception accorded to the Greater New York Number published last March has encouraged us to prepare similar special issues. The December number of the AMERICAN JOURNAL OF SURGERY will be an extra large Philadelphia issue, devoted to contributions from leading surgeons of that city. Among these will be: "A Consideration of the Diagnosis and Treatment of Retro-Displacement of the Uterus," by E. E. Montgomery; "Tumors of the Urethra in Women," by Barton Cooke Hirst; "Roentgen Treatment of Malignant Diseases," by Charles Lester Leonard; "The Control of Hemorrhage During Pregnancy," by Edward P. Davis; "The Diagnosis and Treatment of Ectopic Pregnancy," by F. Brooke Bland; "The Conservation of the Middle Turbinate Body," by William A. Hitschler; "Cyclodialysis," by Walter L. Pyle; "Polypoid Growth of the Rectum and Report of a Recent Case," by Lewis Adler, and papers by Ernest LaPlace, William Campbell Posey, H. M. Christian and John A. McGlinn.

Surgical Suggestions.

Aspirin can replace morphine for many of the post-operative pains, particularly at night.

A psoas abscess may point over the anterior spines of the ilium, simulating osteomyelitis of that bone.

Before operating on a case of prepatellar or olecranon bursitis, symmetrically placed and indolent in course, give the patient thorough antisyphilitic treatment.

The "lymphangeoplastic" operation of Simpson Handley is simple and may prove a great boon to patients suffering from otherwise incurable edemas of the extremities (elephantiasis, compression of the axillary vein by cancer of the axillary nodes, obliterating thrombosis of the iliac vein, etc.).

Abdominal pains associated with a small mass in the umbilical region, or at the brim of the pelvis, should arouse the suspicion of a possible "fused," "horseshoe" or "pelvic" kidney.

The examination of the urine secured from each side by ureter catheterization is the most satisfactory means of determining the condition and functional activity of each kidney. Cryoscopy never earned general acceptance, and the phloridzin and indigo-carmin tests have not an absolute value.

A sufficient number of cases have been reported to demonstrate that appendicitis may simulate the signs and symptoms of renal or ureteral calculus—including hematuria and a skiagraph shadow in the path of the ureter.

One of the simple and best differential signs between renal and vesical hematuria is obtained by standing the urine in a conical glass for twenty-four hours. In hematuria of vesical origin, all the blood has settled to the bottom by this time; in renal hematuria, the whole fluid still remains smoky.

The operation that most surely provides a cure for pararectal fistula is complete extirpation of the tract. This can be done in a great many cases. The radical removal of all portions of the tract may be assured if it is first injected with colored paraffine. The operation is less mutilating than incision through all the tissues, and healing is not only quicker but more certain.

Book Reviews.

Diseases of the Bones and Joints. Clinical Studies.

By JOEL E. GOLDTHWAIT, M.D., CHARLES F. PAINTER, M.D., ROBERT B. OSGOOD, M.D. Octavo; 685 pages; 287 illustrations. Boston: D. C. HEATH AND Co., 1909. Cloth, \$6.

On the borderline of medicine and surgery there is no more interesting and perplexing set of conditions than those peculiar chronic joint affections—variously called rheumatoid arthritis, arthritis deformans, metabolic osteoarthritis, and the like—whose manifestations are as distressing as their etiology is obscure. The authors of this book, who have given much study to these joint affections, throw no new light on this obscurity—they make no pretense to do so; but they attempt to do what is next most important, viz., to clarify our clinical conceptions of chronic joint diseases, and by correlating symptomatic groups with pathological findings, to help to prepare the way to an understanding of causes and the establishment of rational treatment.

The work is divided into three sections. Section I is devoted to *Tuberculosis of the Bones and Joints*. It includes a very good chapter on *methods of physical examination*. This section does not follow the stereotyped lines of the text-book, but it presents a most interesting study of the manifestations of tuberculosis in the bones and, more especially, in the joints; and a modern statement of its treatment, both locally and by such other measures as we have learned to adopt with our broadening conceptions of the management of tuberculosis in general.

Section II, *Non-Tuberculous Diseases of the Joints*, is the most interesting, because the most novel. Those who are familiar with recent contributions by these authors to the *Boston Medical and Surgical Journal* will recognize the classification they adopt here of the non-tuberculous arthritides:—(1) Infectious Arthritis, (2) Atrophic Type, (3) Hypertrophic Type under infectious arthritides are included articular rheumatism and all other (non-tuberculous) arthritides due to infecting organisms (or their toxins).

As the atrophic type of non-infectious arthritis the authors describe a fairly definite clinical entity, not without, however, borderline approaches to other forms of chronic arthritis. So-called rheumatoid arthritis, and Still's disease belong to this group, the essential features of which are at once recognized by the excellent photographs and skiagraphs. The page and a half on etiology demonstrates our ignorance of the cause, and goes no further, indeed, than the argument that it is probably not microbic. Most interesting, however, is the discussion of the pathology, based on personal studies of these joints at various stages. The authors point out that "there has been too great a tendency to regard the terminal lesions, which . . . represent in point of fact a stage of repair, as characteristic of the fully developed disease." The changes involve all the bone structures; and the earliest lesions are in the synovial membrane and take the form of a villous arthritis. "The normal tissue elements of this structure undergo hypertrophy and round-celled infiltration becomes pronounced, particularly in the tips of the villi." The subsequent changes, gross and microscopic, in the synovia, the cartilages, and the bone (in which the lesions appear last) are described and illustrated.

Under the term hypertrophic arthritis are described as one "chronic constitutional disease with local joint manifestations" a group of joint affections that have generally been regarded as separate entities. The affections called Heberden's nodes, morbus, coxæ senilis, spondylose rhizomelic and osteoarthritis, respectively, are but manifestations of this constitutional disease. Unlike the atrophic type, the hypertrophic is not always poly-articular, nor has it quite the same joint distribution. Unlike the atrophic type, too, trauma and exposure play an important etiologic rôle. The pathological changes are quite different also, and these the writers describe from studies of early cases made from tissues removed by arthrotomies. The important change is in cartilaginous hy-

pertrophy. While there may be localized villous hypertrophy in spots associated with these cartilaginous changes, the general cavity of the joint is usually fairly normal. In some cases the subsynovial fat is in excess, diffusely or localized. The hypertrophy of the cartilage is irregular, particularly along the trochlear surfaces; and it produces a fairly characteristic "lipping."

The clinical courses of the atrophic and the hypertrophic types are described, and illustrative case histories are furnished. Cure is difficult in both forms, but much can be accomplished by intelligent treatment, as outlined.

While their pathological studies, have been, of necessity, limited, the authors are satisfied by those studies and by their clinical observations that "hypertrophic arthritis" and "atrophic arthritis" are not related, as many believe, and that though the terminal lesions of these two types and of the infectious type have some resemblances, they are separable pathologically and clinically and they may be differentiated by careful anamnesis and examination. Perhaps it is too bold to regard as one disease,—hypertrophic arthritis (osteoarthritis),—so many joint affections known to us by other names; and to so sharply separate from it the disease or diseases of the atrophic type (rheumatoid arthritis). But, at least, this description affords useful clinical and anatomical conceptions, and they may prove adaptable, without great violence, to later acquisitions to our knowledge.

Also in Section II of this book are chapters devoted, respectively, to *Lipomata* (of joints), *Neoplasms*, *Hysterical* and *Functional Joints*, (we presume the authors mean "functional joint disorders." "Functional joints" is inexcusable medical slang), and *The Operative Technic and Mechanical Treatment of Chronic Non-Tuberculous Joint Disease*.

Section III has no title. It deals with miscellaneous subjects: *Lues*, *Osteomyelitis*, *Rachitis*, *Osteogenesis Imperfecta*, *Chondrodystrophia Fetalis*, *Ostitis Deformans*, *Villous Arthritis*, *Gout*, *Hemophilic Joints*, *Intermittent Hydrops*, *Subdeltoid Bursitis*, *Round or Stoop Shoulder*, etc. Some of these chapters, e. g., that on hemophilic joints, are too brief. That on subdeltoid bursitis condenses much that had previously been written by Goldthwait.

It is difficult to understand why the authors included lipomata, neoplasms and hysterical joints in the section on Non-Tuberculous Diseases of the Joints, and yet put villous arthritis, gout, lues of the joints and intermittent hydrops in the nondescript section of miscellaneous disorders.

The consideration of diseases of the bones is very fragmentary, indeed, and the title of the book is therefore misleading. Even the joint diseases are not all included, nor was it intended that they should be. The sub-title, "Clinical Studies," expresses the general character of this excellent work, and affords some notion of its scope. If these "studies" accomplish nothing more than encourage close clinical observations of cases of chronic joint disease, and to stimulate a more general effort to afford relief to the unfortunates whom those curious diseases afflict, their publication in book form will have served a very useful purpose!

The Collected Papers of Joseph, Baron Lister, Member of the Order of Merit, Fellow and sometime President of the Royal Society, Knight Grand Cross of the Danish Order of the Dannebrog, Knight of the Prussian Order pour le Mérite, Associé Etranger de Institut de France, etc. In two quarto volumes. Vol. I., 410 pages; Vol. II., 552 pages. Illustrated. Oxford: AT THE CLARENDON PRESS, 1909.

On April 5, 1907, Lord Lister reached the age of eighty years, and the anniversary was recognized by greetings from medical and scientific bodies all over the world. As this date approached the desirability of some permanent record of so important an event was generally felt. In many foreign universities, especially in Germany, such a memorial would have taken the form of a "festschrift"—a volume containing contributions to medicine written for the occasion by friends and pupils of him who was to be honored. In this country such festschrifts have been pub-

lished in honor of Wm. H. Welch, of A. Jacobi, and (in serial form in *Surgery, Gynecology and Obstetrics*), of the elder Senn. In Great Britain, however, tributes to medical men have never, we believe, been expressed in this delightful form. Those who undertook the preparation of a Lister commemorative publication hit upon another and, it seems to us, even happier idea. Their plan (as announced editorially in the *AMERICAN JOURNAL OF SURGERY*, May, 1907), was the preservation in book form of all Lord Lister's publications and addresses. The execution of this plan was undertaken by a committee composed of Sir Hector Cameron, Sir W. Watson Cheyne, Mr. Rickman J. Godlee, Dr. C. J. Martin, and Dr. Dawson Williams, with the cooperation of Lister himself. The result of their labor is before us in two beautifully printed and handsomely illustrated quarto volumes—a credit to the book work of the Oxford University Press and an artistic tribute to the venerable father of modern surgery!

These two volumes contain practically all of Lister's articles and essays down to the present time and all of his addresses that possessed more than merely local interest. The articles are divided into four parts, according to the general heading under which they could be grouped. Part I, *Physiology*, and Part II, *Pathology and Bacteriology*, constitute volume one. Volume two contains Part III, *The Antiseptic System*, Part IV, *Surgery*, and Part V, *Addresses*. In each part the chronological order of the several papers has been followed. An early and a current portrait of Lord Lister are frontispieces of the respective volumes.

It is unnecessary to review the contents of these two handsome volumes—they are already a part of the history of medicine, and those who are unfamiliar with them are nevertheless employing or enjoying the fruits of the labors that these essays represent.

One naturally turns first to that monumental essay (volume two) *On a New Method of Treating Compound Fracture, Abscess, etc., with Observations on the Conditions of Suppuration*, published in the *Lancet* in 1867, and reads and re-reads with increasing admiration of the man, that epoch-making paper, so rich in brilliant clinical observation and comparison, curiously mixed with scarcely less brilliant misconceptions; so expressive of the pitiful burden of the surgery that was, and—conceived of a master mind working along the path of a correct principle—so gloriously pregnant with the beneficent surgery that was to be! One reads the other essays relating to the antiseptic system with still increasing admiration of the scientific observations by which their author modified, corrected, developed the principles and the practice of this, one of the two greatest contributions to surgery.

On the introduction of antiseptics (and asepsis is but its natural outgrowth) Lister's fame will rest, but let those who know no other of his claims to prominence among great surgeons, turn to his essays in part I, physiology, part 2, pathology and bacteriology, or part 4, surgery, or even read the interesting *Introduction* in volume one, that they may appreciate the scientific precision of his physiological experiments and histological studies, his even more important additions to the earlier bacteriological methods, and his originality and experience as an operator.

It takes nothing from Lister's greatness to admit that Pasteur was greater, and that Pasteur's discoveries are the secure foundation on which antiseptics and asepsis are built! Lister had been patiently studying the problems of inflammation, "putrefaction" and wound repair. He had opposed the general belief that suppuration was an essential part of the process of healing and had expressed the opinion that this process should be, as in such subcutaneous injuries as fractures, without suppuration and constitutional reaction. He believed these resulted in some way from the putrefaction of blood and wound secretions. He had even instituted in his wards the washing of the hands before dressings. He was speculating on these matters when Pasteur's papers were published. They furnished the explanation for which he had been seeking, and which he, before all others—and for some time in spite of many others—was prepared to receive and apply! Lister is truly the father of modern surgery and its benefits to the people of the earth are his eternal monument!

Surgical Diagnosis. By EDWARD MARTIN, M.D., Professor of Clinical Surgery in the University of Pennsylvania. Large octavo; 772 pages; 445 engravings and 18 plates in colors and monochrome. Philadelphia and New York: LEA & FEBIGER, 1909.

The book is written "in the interest of early diagnosis in its relation to helpful and curative surgery." Stress is therefore laid upon symptoms of major or deciding moment, or when such are absent, upon operative or laboratory means of diagnosis. This is the keynote of the book and this object has been kept in view throughout, at times to the distinct detriment of its instructive value.

The introductory chapter on *Laboratory Diagnosis* by LONGCOPE, is conservative and clear, and does not attempt to teach laboratory methods (and therefore fail to do so!) in 20 pages. PANCOAST's chapter on *x-ray diagnosis* is now a necessary adjunct to books on surgical diagnosis. The numerous outline drawings of fractures, with short captions below each picture, scattered throughout the volume, add greatly to its teaching value and permit of the presentation of very numerous cases within a short compass. ANSPACH's chapter on gynecological diagnosis is as complete as anything of this nature, compressed within 46 pages, can be. WEISENBURG, who has been given 83 pages to outline diseases of the nervous system, has written a chapter well up to date and sufficiently complete.

The rest of the volume is from the pen of Martin himself, dealing first with general surgical diagnosis—inflammations, trauma, tumors, skin, bloodvessels, lymphatics, muscles, tendons, and bursae, and bones and joints; secondly, with regional diagnosis.

The classification throughout is systematic, the treatment clear and concise, and practically no omission of known diseases can be found. Necessarily extreme brevity predominates—tumors of the breast occupying but one and one-half pages; the symptomatology of an important disease such as erysipelas being compressed into one sentence, "It is usually superficial in type and accompanied by great swelling, redness, slight vesication, glandular involvement and marked constitutional symptoms of sepsis."

Unfortunately, the demands of a large class of medical readers force authors to write books "completely covering an entire subject," and while authors and publishers must strive to satisfy such impossible requests within the covers of a single volume, the text is reduced to a concentrated product which requires liberal dilution to become palatable. Therefore, although this book is excellent of its kind, complete, conservative, well balanced between laboratory aids and bedside observation, profusely illustrated and of good typography, all has been sacrificed for the sake of completeness and the resultant is a mere epitome at the cost of all perspective and the omission of all differential reasoning.

Immunity and Specific Therapy. By W. D'ESTE EMERY, M.D., B.Sc., Lond. Clinical Pathologist to King's College Hospital and Pathologist to the Children's Hospital, Paddington Green, etc. Octavo; 448 pages; illustrated. New York: PAUL B. HOEBER, 1909. \$3.50, net.

The author's aim has been to review the extensive work on immunity in a manner to be readily grasped by those not engaged in special research on this subject. It is a pleasure to record that this work has been done exceeding well. After a thorough perusal of this book one is left with the impression that the author is master of his subject, from the standpoint both of knowledge of the literature and of practical laboratory experience. His pedagogic capacities are revealed in a logical and lucid exposition of the subject, a style distinguished by simplicity and directness of expression, and a judicial temperament that steers him clear of advocating the views of any particular school of thought.

The titles of the chapters indicate the scope of the work: Introductory and general, the Nature of Toxins, the Phenomena of Antitoxin Formation, the Interactions of Toxin and Antitoxin, the Origin of Antitoxin—the side-chain theory, Immunity to Toxins, Bacteriolysis and Allied Phenomena, Agglutinins, Precipitins, Phagocytosis, "Re-

actions" and Similar Phenomena, Colloidal Theory of Antibodies, Immunity to Bacteria, and Practical Applications. An excellent working bibliography is appended and the introduction of a glossary fills a much felt want.

The book is most opportune and can be cordially recommended to those who desire to know the present status of this complex subject.

Medical Sociology. A Series of Observations Touching Upon the Sociology of Health and the Relations of Medicine to Society. By JAMES PETER WARBASSE, M.D., Surgeon to the German Hospital; Attending Surgeon to the Seney M. E. Hospital, Brooklyn, N. Y.; Member, American Medical Association, American Association for the Advancement of Science, American Society of Sanitary and Moral Prophylaxis, Ethical Social League, etc. Duodecimo; 355 pages. New York and London: D. APPLETON & COMPANY, 1909. Price, \$2.00.

This small book is a collection of short essays on medico-sociologic subjects, charmingly written. Several of these essays appeared as editorials in the *New York State Journal of Medicine*, when the author was its editor; others appear now for the first time.

For the layman and the doctor alike, there is a rich fund of knowledge of practical and of great sociological value in this book. The homely style, by which point after point is driven home by simple analogy, by plain yet forceful metaphor will appeal to all classes of people. The ground work of this volume is common sense and frankness. On this are broadly built the principles that should guide us in health and in the treatment of disease from the layman's and from the physician's viewpoint. Warbasse fearlessly enters such problems as the instruction of the young in sexual hygiene, the relation of the state to medicine, ignorance and disease, etc., fearlessly because there is something of vital importance to be taught. Other writers have said these things before, but Warbasse's vigorous, convincing, yet simple style makes his book far-reaching—to parents, to the youth, to layman, to physician. The book should be in the library of anyone interested in the live problems of health and of disease of to-day.

A Text-Book of the Diseases of the Ear. For Students and Practitioners. By PROFESSOR DR. ADAM POLITZER, Imperial-Royal Professor of Aural Therapeutics in the University of Vienna; Chief of the Imperial-Royal University Clinic for Diseases of the Ear in the General Hospital, Vienna, etc. Translated at the Personal Request of the Author and Edited by MILTON J. BALLIN, Ph.B., M.D., Assistant Surgeon, New York Ophthalmic and Aural Institute; Assistant Surgeon, Mount Sinai Dispensary, Ear, Nose and Throat Department; and CLARENCE L. HELLER, M.D. *Fifth Edition*, Revised and Enlarged. Octavo; 892 pages; 337 original illustrations. Philadelphia and New York: LEA AND FEBIGER, 1909.

This latest edition of Prof. Adam Politzer's book on the Ear has been carefully revised and edited by the translators to keep it abreast of the latest that is known in otology. The great advances that have been made in the past few years particularly in the pathology of diseases of the internal ear, and the greater boldness with which operators enter the labyrinth have materially enlarged the field of otology and thus made it necessary in this treatise to insert a number of pages on the pathology and symptoms of labyrinthine conditions.

The careful investigations undertaken at the author's clinic in reference to the functions of the labyrinth in the normal and diseased state, and, in particular, the association of labyrinthine conditions with nystagmus and disturbances in equilibrium, have furnished data of importance, not only to the aurist, but also to the neurologist. These various tests are described in great detail and are an example of the painstaking researches for which the German clinics are so well known. We are sorry to see that no mention is made of Dr. Richard's work on the labyrinth which Dr. Politzer has praised in papers within the year.

It has been the general consensus of opinion that this is the greatest book that has ever been written about the ear. Professor Adam Politzer is the recognized authority on the ear and perhaps has the greatest reputation of any man living in this specialty. This translation contains for the most part, Politzer's own experience, his own opinions and his own methods.

The translators are to be praised for the clearness of their diction and the ability with which they so correctly construed many almost difficult passages from the German. Their hearty co-operation with Dr. Politzer himself has made the translation as accurate as the original.

It is almost impossible for the reviewer to describe the wealth of material that is contained in a book of this kind. Such a volume must be constantly referred to for a considerable length of time and must be read carefully again and again before even the smallest portion of it is mastered. We venture to say that not even the most insignificant item referring to the ear has been omitted. There are even chapters on artificial ear-drums and megaphones and the adaptability of these to individual needs.

We would suggest that later editions be brought out in two volumes so that the spacing may be made greater and larger type used. The illustrations are fair. Their distinctness is somewhat marred by being printed on thin glossy paper.

Tuberculosis of the Nose and Throat. By LORENZO B. LOCKARD, M.D., Laryngologist and Rhinologist to the Jewish Consumptives' Relief Society Sanatorium, the Y. M. C. A. Health Farm and the Evangelical Lutheran Sanatorium; formerly Laryngologist to the National Jewish Hospital for Consumptives and Member of the Board of Directors of the Agnes Memorial Sanatorium; One Time Professor of Anatomy, Toledo Medical College, etc. Octavo; 368 pages; 85 illustrations, 64 of them in colors. St. Louis: C. V. Mosby Medical Book and Publishing Co., 1909.

The main objects of this book are to place before the profession the modern views concerning the early recognition, the treatment and prognosis of the disease, in the hope that it will engender an increased faith in the efficacy of treatment and a full appreciation of the importance of early diagnosis and treatment and of the routine examination of the larynx in every consumptive. Statistics show that in one-third of all patients suffering from tuberculosis of the lungs, there is a complicating lesion in the throat. Autopsy examinations reveal the presence of tubercular lesions in the larynx in fifty per cent. of lung cases. In many of these cases the development of a focus in the larynx or pharynx increases the constitutional symptoms, often producing intolerable pain and sometimes proving the direct cause of death.

The author places before us a perfect treatise on a subject of inestimable value. The work is complete in every detail. The first chapter deals with the history of laryngeal tuberculosis; the next three take up the etiology; six more chapters cover the field of pathology and symptoms; four chapters are devoted to treatment; and lastly, three chapters are devoted to tuberculosis of the nose, nasopharynx and pharynx.

By far the most important part of this treatise is that dealing with treatment. The author disapproves of the use of tuberculin in laryngeal tuberculosis. "In not a single instance was there any notable improvement, at least in excess of that which usually occurs in patients who are placed under the best of hygienic conditions, but without treatment other than enforced vocal rest, cleansing sprays, etc." He considers lactic acid and formalin the best medicaments for topical application. "Formalin can be used daily in a strength of from 3 to 5 per cent., thus maintaining a continuous influence, an effect impossible of attainment with lactic acid, and to this continued action, can be credited much of its remarkable power." The x-ray application is uniformly disappointing. After a careful perusal of the pages on treatment particularly, one is struck with the enormous experience in therapy the author has had.

The book abounds with practical knowledge of all the phases of tuberculosis of the nose and throat. It is probably the most extensive and comprehensive book of its kind on this subject and presents a wider and more encouraging knowledge of a field which too often is treated negligently, both by the internist and the specialist.

The colored illustrations, which are numerous, are beautifully drawn and in themselves form a valuable atlas of all the various stages of tuberculosis of the upper air passages.

A Text-Book of Surgery. For Students and Practitioners. By GEORGE EMERSON BREWER, A.M., M.D., Professor of Clinical Surgery at the College of Physicians and Surgeons, Columbia University, New York; Surgeon to the Roosevelt Hospital, etc., etc. *Second Edition.* Octavo; 915 pages; 415 engravings and 14 plates. New York and Philadelphia: LEA AND FEBIGER, 1909.

This, the second edition of Brewer's work, as compared with the first edition (1903), shows a marked improvement. We know of no text-book of surgery that needed it more!

The author has evidently appreciated (and in his preface, he practically confesses) that in his earlier effort at condensation he overshot the mark, and produced a book altogether too fragmentary to be of any real service. A perusal of his second edition shows that his work has, indeed been "thoroughly revised and much enlarged." In actual bulk the enlargement has been by almost one-third; while the text itself has been largely rewritten and somewhat rearranged. Of the new illustrations, of which there are over 100, the most striking are the colored plates made from photographs taken by the Lumière process.

While in its present form, this work more nearly approaches the needs of the student, it is still scarcely adequate as a text-book of surgery.

Manual of the Diseases of the Eye for Students and General Practitioners. By CHARLES H. MAY, M.D., Attending Ophthalmic Surgeon to the Mount Sinai Hospital, New York; Instructor in Ophthalmology, Columbia University (Coll. P. and S.), 1890-1903, etc., etc. *Sixth edition.* Duodecimo; 391 pages; 362 illustrations, including 62 colored figures. New York: WILLIAM WOOD AND Co., 1909. \$2.00, net.

This small manual has been one of the most successful medical text-books ever published. It has been adopted by students in many colleges and is widely known to practitioners all over the world by reason of its German, Italian, French, British, Dutch, Spanish and Japanese editions.

This, the sixth American edition, needs no extended review nor fresh commendation. While the work has not been enlarged, nor considerably altered, it has been carefully revised and new paragraphs have been introduced. Dealing with the conjunctival tuberculin test, trans-illumination, cerebral decompression, etc.

Text-Book of Anatomy and Physiology for Nurses.

Compiled by DIANA CLIFFORD KIMBER, Graduate of Bellevue Training School; formerly Assistant Superintendent, N. Y. City Training School for Nurses and Illinois Training School. *Third Edition.* Revised by CAROLYN E. GRAY, R. N., Assistant Superintendent, New York City Training School for Nurses. Octavo; 421 pages; 212 illustrations. New York: THE MACMILLAN Co., 1909. Price, \$2.50.

The third edition of this excellent book for nurses has in many parts been added to and brought up to date. This is especially noticeable in the illustrations which are for the most part, copies from the standard text-books of anatomy and physiology. They make the text clear and do not confuse.

The introductory chapter which has been added to the former edition deals with the basic principles of chemistry in lucid, easily understood style. The chapter on the nervous system has been completely rewritten and is put before the student in an interesting way. We think, however, that it is much too technical and detailed for the average

busy student-nurse. The summaries that have been appended to each chapter are perhaps the best addition that has been made in this new edition. They are simple, readily understood and remembered, and must serve to clear the somewhat confused ideas that beginners would have after reading chapters on a subject which, no matter how well put, is intricate and involved.

Neurasthenia. By GILBERT BALLET, Professeur agrégé à la Faculté de Médecine de Paris, Médecin de l'Hôtel Dieu, Président de la Société de Neurologie. Translated from the third French edition by P. CAMPBELL SMITH, M.D. Octavo; 408 pages; 7 figures. New York: PAUL B. HOEBER, 1909. Price, \$2.00, net.

This work (of which the two earlier French editions were conjointly by Ballet and Proust) is an excellent general treatise upon the subject. The translator has given a good English text and added a valuable introductory chapter. The author's preface at once suggests decided ideas of treatment—psychotherapeutics, in its widest application and condemnatory words for drugging.

Throughout the book, the author rigorously adheres to his text, and this together with a regard for the wearisome effect upon the reader of unnecessary speculative discussion, affords a happy contrast to some other works upon the subject.

The translator's differentiation between what he terms neurasthenia minor and neurasthenia major, does not appear warranted. The distinction, as based upon pathogenesis, is not clear.

While admitting the possibility of a development, de novo, Ballet is a strong adherent to the doctrine of hereditary soil. He would make neurasthenia a "degeneration neurosis," but wisely qualifies, and thus modifies, his view. It would be better, in our opinion, to speak rather of "congenital anomaly of development." From a soil, prepared by heredity, improper education, allowing activity to the inherent vices of constitution, send forth subjects ill-prepared to stand the strain of daily pursuits, upon emotions and intellect.

An intelligent classification of the etiological factors, leads the reader to a clear understanding of the chapters devoted to treatment.

The final word given by the author to a rather unnecessarily lengthy discussion of the pathology of neurasthenia, leaves no doubt of his strong conviction that the disease is an exhaustion neurosis; that loss of cell energy, cerebral and spinal, is the basis of the pathological condition.

One is impressed with the definite conception, and consistency which the author shows throughout the chapters. He clearly differentiates the clinical entity—he has proposed to elaborate from other functional conditions so often erroneously identified with neurasthenia. Among these are the depression psychoses, true hysteria, hypochondria, etc.

Throughout, the writer adheres to the special features that portray the clinical entity and which Charcot originally regarded as the stigmata of neurasthenia. These are the persistent headache, neuromuscular asthenia, rachialgia, gastrointestinal atony with its resulting dyspeptic symptoms, insomnia and cerebral depression.

The author, in discussing each of these cardinal symptoms is mindful that intelligent treatment is dependent upon a clearly understood pathology; that prophylaxis depends upon a knowledge of etiology.

Ballet, with much commendable care points out the essential differences, between neurasthenia and those true perversions of mind among which are "maladie de doute," the pure abulias and other borderland psychic perversions. He justly takes issue with some writers, Janet among them, who would use the term psychasthenia, to denote a large class of cases—those upon the threshold of true psychoses. On the other hand Ballet himself, has made his classification so broad that he has included cases that would be properly classed as forms of dementia precox.

Most commendable are the chapters upon treatment, the one devoted to education, more particularly. Hypnotism for the neurasthenic is properly condemned, while sugges-

tive therapeutics, direct and indirect, are commended. Concise and clearly stated are the suggestions for treatment. Illustrative of the author's view of the value of proper mental occupation, for the adult neurasthenic, is the declaration that every profession when once adopted, corresponds from the moral standpoint to a group of constant and co-ordinate suggestions, that impel us to act in conformity with a ruling idea and impose on us at any moment, in spite of our individual passions or hereditary inclinations, a rule of conduct conformable to our calling. The chapter devoted to education of the child, predisposed by a bad heredity to become a neurasthenic, is full of valuable suggestion for the physician and pedagogue.

The book does not furnish much that may be called new, but it is a clear exposition of what is definitely known upon the subject and its literary style makes it good reading.

La Fulguration, La Valeur Thérapeutique. By DR. A. ZIMMERN, Professor of the Faculty of Medicine, Paris. Duodecimo; 96 pages. Paris: J. B. BAILLIÈRE ET FILS, 1909. Price, 1 fr. 50.

This interesting little book gives an impartial and very critical survey of the present status of fulguration, first brought into prominence by the studies of de Keating-Hart. Zimmern enters into the history of electrical treatment of surgical conditions, and then presents some theoretical considerations concerning high-frequency currents and the fulguration spark. The instruments and the methods of application are then described in simple style, and the author proceeds to a consideration of the results. There are, in the literature, most enthusiastic and most pessimistic reports on fulguration; Zimmern concludes from what he has seen and read that fulguration unquestionably stimulates the formation of scar tissue to a marked degree and that it has therefore proven of great value in the healing of all forms of sluggish wounds and ulcers. It does not cure carcinoma, but does induce scar formation very resistant to carcinomatous invasion; therefore, it is of value in closing defects left by the removal of carcinomata and in healing over various types of inoperable carcinoma.

The Psychic Treatment of Nervous Disorders. By DR. PAUL DUBOIS, Professor of Neuropathology at the University of Berne. Translated by SMITH ELY JELLIFFE, M.D., Ph.D., Visiting Neurologist, City Hospital; Instructor in Materia Medica and Therapeutics, Columbia University, New York; and WILLIAM A. WHITE, M.D., Superintendent Government Hospital for the Insane, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University. *Sixth Revised Edition.* Octavo; 485 pages. New York: FUNK & WAGNALLS COMPANY, 1909. Price, \$3.00, net.

The latest edition of this most important work is a valuable addition to any doctor's library. That it should have been necessary to bring forth six editions of a book of this kind in less than five years is convincing that it has certain merits which appeal not only to the neurologist, but also to any man, be he physician or not, who is at all interested in psychology.

Dr. Dubois shows himself not merely a neurologist, but also eminently a psychologist of the rarest kind—a man who not only can evolve principles, but can apply them practically to the cure of his patients. It would be well if we had more men of his kind; if we had more works like this. The one fact is indelibly impressed on the reader, that it is possible to be "persuasive" with psychopaths and that a great many abnormally diseased minds can and should be cured by arguing rationally and gently with the patient until he is able to see the baselessness of his aberrant thoughts.

If the book speaks the man, Dr. Dubois must have a wonderful personality. We fear that with the best of intentions, most of us would feel that we were not capable of commanding our patients to such a degree that they would be willing to undergo prolonged treatment of the mind without the customary treatment of the body.

Progress in Surgery.

A Résumé of Recent Literature.

Hernia of the Diaphragm, Traumatic and Acquired.

T. C. LITTLE-JONES, Liverpool, *Liverpool Medico-Chirurgical Journal*, July, 1909.

The author reports two interesting cases. The first was that of a young man who fell down a flight of stairs and shattered a picture glass. He sustained a wound about 2½ inches long in his seventh left intercostal space, through which a small piece of omentum was protruding. The author removed the eighth rib, cleaned out the pleural cavity of a large amount of blood and glass and found a rent 1½ inches in length in the diaphragm about half an inch from the pericardium, through which omentum was protruding. The omentum was ligated and removed and the rent in the diaphragm was sutured. Despite a rather severe attack of pneumonia, the patient recovered and is to-day perfectly well. The second case occurred in a child of eight, who gave a history of repeated attacks of colic consequent to a fall which occurred eight months before. An attack of obstruction supervening, the patient was operated upon and it was found that the omentum and parts of the transverse and descending colon had passed into the left pleural cavity through a hole the size of a shilling. Great difficulty was met with in attempting to reduce the contents but this was finally accomplished when the negative pressure in the pleural cavity was released by puncturing the diaphragm with a probe director. Nevertheless a portion of the omentum was found densely adherent and the author contented himself with closing the opening in the diaphragm with the prolapsed omentum. The patient seemed to do well for two days and then died from causes not discoverable at the autopsy.

Large Sliding Hernias of the Sigmoid, with the Description of an Operation for Their Relief.

LUCRUS W. HOTCHKISS, New York. *Annals of Surgery*, August, 1909.

Hotchkiss deals chiefly with that variety of sliding hernia of the sigmoid, in which there is generally a large peritoneal sac into which the sigmoid and its mesentery are dragged. The sigmoid in this variety is covered with peritoneum except at the mesenteric attachment. These herniæ are usually irreducible because the mesosigmoid forms a part of the posterior wall of the sac. To follow out the principle essential to the repair of all hernias, viz., the high ligation of the sac flush with the parietal peritoneum is, of course, quite impossible unless some means be devised of reducing the sigmoid within the sac. Tying off the mesosigmoid will accomplish this, but this cannot be done for any considerable distance without sacrificing the blood supply of the bowel.

Hotchkiss has employed the following device: Having freed the cord from the sac, the latter is opened anteriorly and its reducible contents returned into the abdomen. The incision in the sac is then prolonged upward to the internal ring and downward nearly to the lowermost attachment of the mesosigmoid. Now pulling the adherent sac forward the peritoneum of the split sac will become everted in such a manner as to form a new and elongated mesentery for the sigmoid. The edges of this mesentery are sutured together, and the bowel is then easily reduced. The irregular opening into the peritoneal cavity thus left is now closed by purse-string or other form of suture.

The Present Status of Spinal and Local Anesthesia

(*Ueber den heutigen Stand der Lumbal- und Localanästhesie*). A. BIER, Berlin. *Archiv für Klinische Chirurgie*, Band 90, Heft 2.

The infiltration with weak cocaine solution, as first practised by Schleich, has been widely employed in the past and, although it is being replaced by simpler, more effective methods, there is still a limited field for its use. The great advance in local anesthesia made by Braun was the combination of cocaine with adrenalin. The introduction of the cocaine substitutes—novocaine, alpin, eucaine B, tropococaine—have replaced the original drug to such an

extent that Bier thinks that in the future cocaine will be employed only on mucous membranes. The combination of novocain with adrenalin makes the ideal anesthetic. In adults 80 to 100 cc.m. of 0.5 per cent. novocain solution combined with adrenalin may be injected without any danger. The action of the adrenalin permits these large amounts to be injected, and at the same time affords long duration and great intensity of anesthesia.

Some time ago, Bier introduced a form of local anesthesia by direct injection into the veins, the method being applicable to these cases—sequestrotomy, amputations, excision of extensive varices, etc.—in which the usual methods cannot be practised. It is contraindicated in diabetic and senile gangrene. Bier has employed this technic in more than 134 of the larger types of operations on the extremities.

It is far more difficult to sketch the present status of spinal anesthesia. Bier's experience is that with one exception, due to a technical error, anesthesia was present in every case. Tropicocain has replaced stovaine, being as effectual, and producing no complications. The maximum dose is .05 gm., and Bier always combines it with adrenalin. The height and spread of the anesthesia is controlled by drawing off more or less spinal fluid, and by elevating the pelvis to a greater or lesser height. In 339 cases, only 5 per cent. vomited, and nausea, faintness, and sweating were present in 9 per cent. of the patients. The only sequel was headache, observed in 6 per cent. of the cases.

Bier's indications for lumbar anesthesia are cases in which general anesthesia is contraindicated, extensive and prolonged operations in the pelvis, extirpation of the rectum, etc. It is contraindicated in youthful individuals, in diseases of the cerebrospinal axis, in hysteria, in general sepsis, and in patients who are frequent sufferers from headache.

A New Method of Inducing Local Anesthesia. J. LOUIS RANSOHOFF. *The Lancet-Clinic*, August 7, 1909.

The following case is reported preliminary to a series of experiments on a new method of local anesthesia—that is, by injecting a mild cocaine solution directly into the artery supplying the part to be anesthetized.

Male, aged seventy-two, had been suffering for three years from a chronic osteomyelitis of the hand, which necessitated an amputation. His age and condition contraindicated general anesthesia. An Esmarch bandage was applied about the arm two inches below the insertion of the deltoid. Under infiltration anesthesia the brachial artery was exposed and the needle of a hypodermatic syringe inserted into its lumen, and 1 c.c. of 2 per cent. cocaine solution injected into the artery in the direction of the blood current. After a lapse of two minutes the anesthesia was absolute, and an anti-brachial amputation was done entirely without the knowledge of the patient.

On the Technique of Chondrectomy for Pulmonary Emphysema (*Zur Technik der Chondrektomie bei Emphysema pulmonum*). MAX HOFFMAN, Meran. *Zentralblatt für Chirurgie*, August 7, 1909.

The ordinary operation of chondrectomy as devised by Freund for pulmonary emphysema, consists in the resection (unilateral or bilateral) of about 1½ inches of the cartilages of the second to the fifth ribs. The ultimate success of the operation depends upon the formation of a pseudo-arthritis between the ends of the divided cartilages, so that sufficient latitude for the expansile movements of the chest may be possible. The author reports a modification of this operation, which, he believes, will ensure the attainment of this end. The periosteum over the anterior aspect of the cartilage to be resected is cut away. After resecting about four inches of cartilage, the posterior perichondrium is divided as its middle, and each end is turned over the corresponding rib projection. As much of the perichondrium as will cover the end of the rib is retained and the rest is cut away; the perichondrium is then sutured over the end of the rib. The external point of resection should be at the costo-chondral junction. The author reports one operation performed according to this

method, in which at the end of 8 months, the amount of motion was as large as at the time of operation.

Clonic Spasm of the Diaphragm Associated with a Cervical Rib. G. B. HUNT, Scarborough. *British Medical Journal*, August 7, 1909.

An anæmic girl, 16 years of age, of neurotic temperament, presented herself with a lump in the left posterior triangle of the neck which proved upon examination to be a cervical rib. Three weeks later, the patient was suddenly seized with clonic spasm of the diaphragm, resembling hicough, except that, owing to absence of laryngeal spasm, there was not the characteristic "hic" sound of that condition. Despite the administration of all the usual remedies, the spasm continued and at the end of a fortnight, the patient being in a miserable condition, operation was resorted to under ether anesthesia, the cervical rib was exposed; the brachial plexus lay upon its anterior surface, but the phrenic nerve was nowhere to be seen. The rib was resected. The spasm ceased promptly upon recovery of the anæsthetic and has not returned. The author believes the spasm was due to irritation of the phrenic, but guardedly suggests the possibility that the cessation of the spasm might have been due to the influence of the anæsthetic and suggestion. No similar case has been reported.

The Value of the Test Meal in Gastric Diagnosis.

C. GRAHAM and D. GUTHRIE, Rochester, Minn. *New York Medical Journal*, September 4, 1909.

These authors present statistics of a larger number of test meal examinations and prove conclusively that test meals have not nearly the clinical significance commonly held. For instance, in regard to acidity alone, this was above normal in 103 of 237 cases of gastric ulcer, while in 106 it was normal and in 28 subnormal. In cancer of the stomach, free HCl was present in 70 out of 150 cases. In 84 cases of pyloric spasm due to gall stones and appendicitis, the findings were similar to those in ulcer of the stomach. In pernicious anemia, on the other hand, free HCl was found in but one case, and apart from the food remnants, these cases show a test very analogous to those found in cancer.

[While very iconoclastic, this paper is also very suggestive, and will tend to excite distrust in conventional views on the value of the test meal in diagnosis.]

How Long After Death or Amputation is Bone Bacteria Free and Transplantable? (*Wie lange nach dem Tod oder nach der Amputation bleibt der Knochen bezüglich seiner Keimfreiheit transplantationsfähig?*) W. BERGMANN, Königsberg. *Archiv für Klinische Chirurgie*, Band 9, Heft 2.

Careful bacteriological technic was employed in the examination of twenty specimens of bone from patients that died of various acute and chronic infections and other diseases. The result was that with one exception (a subject who died 44 hours before in diabetic coma) all the cultures were sterile. Bergemann believes that it may be stated with absolute certainty that the bones are bacteria-free for the first 12 hours after death. The examination of the bones from amputated limbs gave less definite results, because several of the six cases studied were from infected fields. Nevertheless the average length of time during which the bones were bacteria-free was 16 hours after amputation.

Experimental Investigation on the Sensibility of the Abdominal Cavity (*Experimentelle Untersuchungen über die Sensibilität der Bauchhöhle*). C. RITTER, Greifswald. *Archiv für Klinische Chirurgie*, Band 96, Heft 2.

The greater part of this interesting experimental work is concerned with the substantiation of the experiments of Meltzer and Kast, who have demonstrated that the old Lennander dictum is wrong and that viscera, as well as parietal peritoneum experience painful (and other) sensations. Ritter extended their observations to all organs in the abdominal cavity and found that they are all subject to pain. Ritter established as standard of pain the ligation of bloodvessels, structures that are everywhere subject to

pain. The sensibility of the viscera is rapidly lost when they are displaced from the abdomen or are subjected to any drying process. Several observations were made on human beings.

The one point on which Ritter disagrees with Meltzer and Kast is their explanation of the action of cocaine. In attempting to account for Lennander's findings, Meltzer and Kast discovered that cocaine when injected into an animal acts as a general as well as local analgesic; they, therefore, suppose that this is what happens in man when the abdominal wall is infiltrated with cocaine for a laparotomy. Ritter found that when cocaine is injected intra-abdominally (r. q., into the mesentery) the parts are rendered anesthetic locally, and no general anesthesia is induced; the small amounts of cocaine used in man acts, he believes, in the same way. He considers that the painlessness of intra-abdominal manipulations in man depends on the injury to the delicate sensory nerve fibers, produced by the manipulations.

Retroperitoneal Lipoma. M. S. HENDERSON. *The Journal of the Minnesota State Medical Association and Northwestern Lancet*, September, 1909.

But few symptoms are produced by such tumors, and they exert their baneful influence upon the individual by mechanical effects due to pressure. Usually it leads the patient to seek relief. A dragging sensation, which does not amount to real pain, is usually complained of. Nausea and vomiting may be present, and the latter may be so persistent as to cause a marked degree of inanition. Dyspnea, due to pressure upwards on the diaphragm, may be a prominent symptom. The growth of the tumor may even be so extensive as to press on the common duct, causing jaundice and introducing a serious complication, making the diagnosis still more difficult. Obstruction of the bowels may supervene. Neuralgia of the legs, and, in fact, almost any symptom that might be caused by pressure on important organs may be present in the late stages.

In the case at hand, a previous history was given of injury, which is often a prominent factor in the causation of lipomata elsewhere in the body.

A diagnosis of these growths is difficult. Probably the most frequent error has been to mistake them for ovarian tumors; the growths closely simulate the fluctuation of a cyst-adenoma of the ovary. This evidence has been so positive to some surgeons that even after a dry puncture an exploration was necessary to convince them of the error of their diagnosis.

This tumor is also often confounded with retroperitoneal sarcoma, but the latter grows more rapidly, and cachexia is, as a rule, more marked.

From the fact that this condition has been variously mistaken for hydronephrosis, distended gall-bladder, pancreatitis, and mesenteric cysts, it will be seen that a differential diagnosis is often impossible, and the condition is one which exploration alone will clear up.

Congenital Recesses of the Lower Lip; With Three Illustrative Cases. R. C. DUN, Liverpool, *Liverpool Medico-Chirurgical Journal*, July, 1909.

The rarity of this condition is evident from the fact that only 38 cases have been recorded in medical literature. These recesses are nearly all associated with hare-lip, with or without cleft-palate. Curiously, this deformity frequently occurs in members of the same family. Three varieties of congenital recesses of the lower lip have been observed, exemplified in all of the author's cases. In the first patient, who also had a double hare-lip and a cleft palate, there were two small symmetrically placed openings on either side of the median line situated more toward the posterior aspect of the lip. The sinuses ran downward slightly converging and ended blindly on the inner aspect of the lip. The second case varied from the first only in the fact that at the mouth of each sinus there was a small nipple-like process which could be protruded or retracted at will. In the third patient, the recess consisted in a mesially placed transverse slot-like cavity, about $\frac{3}{4}$ inch long and $\frac{1}{2}$ inch in depth. There is no valid embryological explanation of

this deformity. The first two cases were easily cured by dissection of the lining membrane of the sinus.

The Operative Mobilization of the Knee Joint (*Zur operative Mobilisierung des Kniegelenks*). R. KLAFF, Berlin. *Zentralblatt für Chirurgie*, August 28, 1909.

This ingenious operation is based upon the fact that in ankyloses of the knee joint, the posterior aspect of the femoral joint surface is uninvolved. The principle of operation consists in the utilization of this area for a new joint surface. The adhesions are first broken down under anesthesia to the point of extreme flexion. With the knee joint held at right angles, a vertical incision is made on the lower and inner aspect of the femur and a large wedge is removed from the bone. The wedge is so made that its base is anterior and includes the upper part of the anterior joint surface of the bone; while the angle lies just above the upper limits of the posterior joint surface. The sawn ends of the femur are then approximated and nailed, care being taken that the fibial aspect of the femoral surface is not disturbed from its place. Thus far the author has performed this operation in two cases. The first patient at the end of 6 months is able to flex his knee joint to the right angled position. The second operation was done too recently to warrant the deduction of any conclusions.

Surgical Aspects of Cerebral Compression. With Remarks on the Etiology and Certain Manifestations of Papilledema. C. H. FRAZIER, Philadelphia. *Journal of the American Medical Association*, September 11, 1909.

Frazier discusses the etiology of papilledema at some length with special reference to the intracranial tension as a cause. He gives the results of experiments made by Dr. de Schweinitz and himself from which he draws the conclusion that some factor or factors other than intracranial tension must play an important part. By neither method employed (increasing the tension by gravitation from a water bag, or inserting a rubber bulb under the dura) was papilledema produced. For the past two years also Dr. de Schweinitz has examined all the cases of intracranial trauma in which there was obstruction to the venous circulation, received in Dr. Frazier's service at the University Hospital and in all he has discovered but two cases of papilledema, which are here reported. It would appear from these cases, in both of which the patients recovered without operation, the papilledema is not an indication for decompressive operation. Frazier also calls attention to the relative infrequency of papilledema as a manifestation of serious types of intracranial trauma. He does not find any diagnostic significance either as to the side on which the tumor causing the symptom is to be located, in the relative size of the discs. Passing next to the subject of decompression operations and confining his remarks chiefly to tumors, Frazier starts with the well-known fact that the majority of intracranial tumors are inoperable and to say that from 75 to 80 per cent. are of this class, is by no means a conservative estimate. We have the choice of two operations, the radical and the palliative, and in the majority of instances the most we can offer is palliation. In case of a brain tumor palliation means more than it does when applied to other incurable lesions. It implies often the restoration or preservation of vision, relief from headache and from persistent vomiting, which make life hardly endurable. Decompression is much the less formidable operation. It implies the removal of an area of bone with a diameter of from 3 to 5 cm. from the occipital or temporal region on one or both sides, and a free opening in the dura or the removal of a portion of it. In all pretentorial tumors, temporal decompression is the operation of choice, and in all subtentorial lesions a suboccipital decompression is indicated. Frazier gives tables of two serious cases which do not indicate a great deal of difference in the two locations of the operation as far as the result was concerned, but it is reasonable to suppose that a preoccipital operation would not be so likely to relieve a subtentorial lesion as one right over the location of the tumor. The operation is called for as a rule in inoperable tumors. Delay is permissible in cases in which there has been a temporary improvement under medical treatment. The hernia is usually well covered with the

hairy scalp and is therefore not very conspicuous. Vomiting or headache, one or either, are relieved in two out of every five cases by decompression. The effects of the operation are in the main beneficial, even if the patient only lives a year, but exceptionally life may be much more prolonged.

The Use of Animal Membrane in Producing Mobility in Ankylosed Joints. W. S. BAER, Baltimore. *Johns Hopkins Hospital Bulletin*, September, 1909.

The animal membrane employed by the author is derived from the pig's bladder and is chromicized so as to resist absorption about forty days. After separating the ankylosed joint surfaces, the membrane is placed between and sutured in place. The joint is then closed and a fixation dressing is applied. Passive and active motions, together with massage, are instituted after the first dressing, i. e., not later than the tenth day. In the five cases in which this method was employed the results were sufficiently satisfactory to encourage further trial. Chromicized pig's bladder gave good results in cases in which Cargile's membrane had failed.

Diseases of the Eye and Orbit Secondary to Pathologic Changes in the Nose and Accessory Sinuses.

CHRISTIAN R. HOLMES. *Annals of Otolaryngology and Rhinology*, June, 1909.

Holmes agrees with Birch-Hirschfeld as to his conclusions in regard to this matter. The author brings out two points in relation to the diagnosis and operative management of suspected cases of frontal sinus infection.

1. When the obscure clinical symptoms and somewhat negative findings of our diagnostic aids, such as the transilluminator, have left us in doubt as to the condition of the sinus, we should not hesitate to make an external exploratory opening. The author has often resorted to a short incision just below the supraorbital margin above the inner canthus and exposing only enough bone to permit the removal of a disc 5 mm. in diameter by means of a hollow electric drill. If the sinus is healthy, then the wound is closed with catgut suture and hermetically sealed with gauze and collodion dressing. This latter is left on for two weeks. In another two weeks it is difficult to find the scar.

2. On account of its great importance, attention is called to the fact that we should not do minor intranasal operations within a period of several days before an extensive external operation in cases where we have to deal with a streptococcus infection because of the liability to erysipelas infection of the skin wound. The minor intranasal operation is liable to excite the streptococci present to a high degree of virulence. While in this condition of exalted virulence infection of the external skin wound is more than likely and an erysipelas inflammation starting in this neighborhood is extremely dangerous to the eye, if not indeed to life itself.

When during an acute frontal sinus inflammation it becomes absolutely necessary to give vent to pent-up pus, establish drainage through a small opening in the floor of the sinus, doing as little damage as possible to the skin and subcutaneous structures and postpone the radical operation upon and cure of the cause until the acuteness of the inflammation and the virulence of the streptococci have subsided.

Orbital Complications of Disease of the Frontal Sinus.

HOWARD F. HANSELL. *Annals of Otolaryngology and Rhinology*, June, 1909.

Affections of the frontal sinus involve the orbit in one of three ways: by displacement of the structures, by infection, by functional disturbances.

1. Mechanical displacement. Protrusion downward of the floor of the sinus by a collection of foreign matter in it will cause displacement of the orbital contents according to the degree and site of the swelling. The symptoms closely resemble those of an orbital tumor interposed between the eyeball and orbital roof.

2. Infection. The pus invades the orbit directly through the perforated bone or is carried to the orbital tissues by the vessels. The causes of indirect infection are caries of

the orbital roof, thrombophlebitis of the orbit, thrombosis of the cavernous sinus, infection of the brain structures and transmission of the germ along the optic nerve sheath to the ball and to the muscles and lacrimal apparatus.

3. Functional, in which there are no anatomical findings. Involvement of the eye and muscles is shown by accommodative and muscular asthenopia, limitation of fields, diminution of central vision and central scotoma. Under this head are included some of those obstinate cases of asthenopia, which glasses will not cure. No lesion of the eye exists. The error of refraction may be small or great, spherical or astigmatic, perfectly corrected under mydriasis and the glasses intelligently worn. It may be that no symptoms exist which point to a sinus disease and attention is not called to the sinus as a possible source of the trouble, yet the oculist's duty is not fulfilled unless he eliminates the frontal sinus from the etiology.

Some Ocular Symptoms of Diseases of the Nasal Sinuses.

WM. CAMPELL POSEY. *Annals of Otolaryngology and Rhinology*, June, 1909.

First the symptoms of the eye-strain which may be evoked by a sinusitis are mentioned. In this assemblage, mention need not be made of the orbital and periorbital pain which the various forms of inflammation of the sinuses may evoke, but attention is called very briefly to the dull ocular pain, to the photophobia and the conjunctival symptoms after any use of the eyes, which glasses fail to relieve and which disappear after rhinologic treatment. In this class of cases the oculist finds difficulty in determining the proper axis of the cylinder, in correcting the astigmatism, and observes various vagaries in the behavior of the ciliary muscles.

In the condition of active and passive hyperemia of the orbital tissues, the function of the extraocular muscles, as well as that of the intraocular, may be interfered with and double vision may result, or if diplopia be not complained of it can be obtained by careful search in the extreme periphery of the field of activity of the individual eye muscles. More constant and serious affections of the muscles of the eye may result from a more active state of inflammation within the sinuses, and actual palsy may occur either as a consequence of the juxtaposition of some of the eye muscles with the walls of the orbit, such as the internal and superior rectus, or by an involvement of the nerves as they pass along the walls of the sphenoidal sinus.

Persistent Thoracic Sinus Following Empyema. A

Report of 15 Cases Treated by Decortication of Lung and Thoracoplasty. CHARLES N. DOWD, New York. *Journal of the American Medical Association*, October 16, 1909.

Dowd has performed the operation of lung decortication connected with thoracoplasty in fifteen cases in children. In his patients ether was used, the patient lying on the sound side. "Orientation" incision was made about the sinus opening with resection of 3 or 4 inches of the rib above and the one below it. The incision was then carried upward in anterior axillary line to the third rib. The ribs were divided and suitable portions removed, usually one-half inch from the second or third, 4 to 6 inches from the tenth, and corresponding pieces from the intermediate ones. Sometimes less was taken away. With suitable retraction an excellent view of the sinus is thus obtained. A longitudinal incision is then made through the upper part of the sinus wall until the lung is reached. At this stage of the procedure the patient is allowed so nearly to emerge from the anesthesia that he will cough, when the lung usually bulges into the incision. The membrane is then separated from its surface over as large an area as is practicable and removed. In most of these cases a strip 2 or 3 inches long and from 1 to 2½ inches wide has been removed. This about represents the pulmonary portion of the sinus lining. The chest wall was nearly brought together by strong sutures and a drain or suction tube inserted in the unclosed part. The amount of chest wall removed varied according to the case and according to the likelihood of gaining lung expansion. In every case persistent and continued blowing on James' (or Wollf's) bottle has been used. The expansive power accompanying this

method is very great. The results are very encouraging, twelve of the fifteen being perfectly well, with varying degrees of chest expansion and capacity, and without lateral curvature of the spine. One patient is still in the hospital, one died of tuberculosis, and one was removed while doing reasonably well two days after the operation, and died a few days later in insanitary tenement surroundings.

A New Method for the Determination of the Coagulation Time of the Blood (*Eine neue Methode zur Bestimmung der Gerinnungszeit des Blutes*). W. RIEBES. *Muenchener Medizinische Wochenschrift*, September 21, 1909.

An accurate yet simple method of determining the coagulation time would be of great value. The author has modified Bürker's method. A large slide is used containing six separate hollows. These cavities are filled with pure olive oil, and a drop of blood, freshly obtained by puncture of the patient's finger, is caught up in each. Every half minute a fine wire (hypodermic) is passed from below upward through the blood drop (so carefully that the drop is not subdivided). In from 12-14 minutes a slight coagulum is raised above the level of the oil during this maneuver, if the oil has been kept at a temperature of 20° C. By using oil as a medium, extraneous influences are minimized and a more accurate determination is possible.

Factors Influencing the Coagulation Time of the Blood. MYER SOLIS-COHEN. *The Pennsylvania Medical Journal*, September, 1909.

1. The variations in the clotting time of the blood as obtained by different methods are due to (a) factors influencing the coagulability of the blood while still in the natural channels and (b) errors of technic affecting the blood after it has left the vessels.
2. Coagulability is not affected by out-door temperature, humidity, menstruation, fever, diarrhea, anemia, or alcohol.
3. The clotting time is shortened in pulmonary tuberculosis in all three stages, after a hemorrhage, and when the barometric pressure is high.
4. Serous hemorrhages, which, according to Wright, are associated with conditions of defective blood coagulability, are sometimes associated with increased coagulability.
5. The clotting time is increased in jaundice.
6. The coagulation time seems to be less before a meal and greater after it.
7. In typhoid fever the blood coagulability is diminished during the acute stage, but increased in convalescence.
8. The clotting time is shortened by applications of heat to the shed blood, by pressure on the punctured part, and by exposing the blood to the air when the humidity is low.
9. Provided the puncture is free and made with a sharp lance-pointed instrument, the depth of the wound does not affect the clotting time. Nor is the size of a drop a great factor if the blood is protected from the air.
10. Many sources of error are eliminated by the stenderish method, which has the following advantages over the other methods of measuring the clotting time: (a) The contact surface is limited in extent, clean, and uniform in character; (b) there is practically no evaporation; (c) the temperature is definite and constant; (d) the size of the drop is uniform; (e) the personal equation is largely eliminated; (f) the method is simple and easily available; (g) the results are fairly constant.
11. By means of simple equations a clotting time obtained with one method may be expressed in terms of another method.

Primary Sarcomata of the Stomach (*Les Sarcomes Primitifs de l'Estomac*). LOFARO, Rome. *Archives Générales de Chirurgie*, August 25, 1909.

After reporting two fatal cases of primary sarcoma of the stomach, the writer reviews the literature of the disease. No etiological factors of any importance can be discovered. The age limits are 3 and 78 years. Pathologically there are two distinct forms: 1. The circumscribed or nodular variety, usually myo-, myxo-, or fibro-sarcoma.

In most cases the tumor grows near the greater curvature, often extending into the great omentum. It may attain an enormous size and may involve the whole stomach; usually, however, the main part of the growth is extra-gastric, the mucosa is not ulcerated, and the pylorus is not encroached upon. These tumors, often presenting interstitial hemorrhages and cystic changes, are frequently mistaken for omental tumors. 2. The diffuse infiltrating type ulcerates the mucosa early in its growth and presents a pathological picture indistinguishable from carcinoma except by microscopical examination.

The symptoms of the sarcomata of the first type may be very few; in some cases the patients complain only of the presence of the tumor. The symptoms of the second type are apt to be more numerous. In the order of their frequency they are: Epigastric pain, presence of a tumor, rapid emaciation, anemia, vomiting, hematemesis, melena, cachexia late in the course of the disease. There may be slight fever, some of the cases present a moderate leukocytosis; in a few cases free hydrochloric acid was absent. The diagnosis is often impossible. Treatment should be radical, when feasible, but too often the patients come to operation at a stage when there are already visceral and glandular metastases.

Multiple Adenomata of the Rectum. JAMES P. TUTTLE, New York. *The Practologist*, September, 1909.

The writer makes a clear distinction between multiple polypi and multiple adenomata. The former are pedunculated, the overlying epithelium is normal, symptoms are not alarming, there is slight (if any) tendency to malignancy or to recurrence after removal. The adenomata, on the other hand, are sessile, rarely limited to one portion of the bowel, very vascular, show a distinct proneness to malignancy and to recurrence after their removal. The chief symptoms of the latter disease are pain, diarrhea, hemorrhage, and exhaustion. From Tuttle's experiences in his cases and in other cases whose treatment he has observed, he concludes that there are no hard and fast rules to be laid down. He does not know whether it is ever wise to attempt to snare, cauterize, or curette this type of growth; nor can he say whether it is justifiable to proceed to radical measures when the general condition of the patient is good and can be maintained so by general and local treatment. In one case the multiple adenomatous growths disappeared by giving the bowel prolonged rest by means of a colostomy.

Extrophy of the Bladder Treated by Extraperitoneal Implantation of the Ureters into the Rectum; End Results of Intestinal Implantation. J. J. BUCHANAN, Pittsburg. *Pennsylvania Medical Journal*, September, 1909.

The author reports a case in which the Bergenhem operation resulted successfully. The patient was an infant 10 weeks old, the subject of a complete extrophy of the bladder. After passing a ureteral catheter as a guide, each ureter was separated, leaving a rosette of mucous membrane about 1 cm. in diameter, surrounding its orifice. The surrounding tissues were pushed off from the ureters until the peritoneum was reached and this was pushed upward until about 4 cm. of each ureter was exposed. With the finger, the rectum was then pushed upward until the rectal wall appeared just underneath the surface; a small opening was made into the rectum and the ureter with its surrounding rosette of mucous membrane was drawn into the rectum. A few stitches were passed between the bladder wall and the skin margin to prevent retraction of the ureters from the rectum. Recovery was satisfactory and seven months later the child was perfectly well.

Being interested in the frequency of ascending urinary infection after intestinal implantation of the ureters, the author undertook an investigation of all the reported cases in which such operations were performed. Of 96 patients, eight died subsequently of ascending renal infection, while 65 were entirely well at the last report, varying from one to 12 years after operation. These figures, according to the author, do not justify the widespread notion that ascending infection is the usual consequence of rectal implantation of the ureters.

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THE DIAGNOSIS AND TREATMENT OF RETRODISPLACEMENT OF THE UTERUS.

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Backward displacements of the uterus occur in about twenty per cent. of the women who come under observation for gynecological conditions. The phenomena generally attributed to such disorders are more frequently produced by the diseased state complicating them. A patient may have for a long period a marked retroversion of the uterus which produces no symptoms until some complication makes it manifest.

A displacement should be suspected when the patient complains of continuous backache; coronal headache; a sensation of weight and dragging in standing or walking which becomes greatly aggravated just prior to menstruation; irritation about the rectum associated with pain and bleeding at stool; the presence of hemorrhoids; prolonged menstruation, and a profuse leucorrhea. The experienced physician needs not to be told that none of these symptoms are characteristic of retrodisplacement, but are common to it, and a number of conditions. While retrodisplacements are not infrequent in the nulliparous woman, they occur with greater frequency in women who have given birth to children, and particularly in those whose labors have been attended with more or less laceration of the cervix and pelvic floor. Naturally the production of the displacement would be expected when for any reason the repair of such lesions had been deferred or neglected. Subinvolution, chronic metritis, fibroid growths in the uterine wall and any condition which increases the weight of the organ is favorable to the production of retrodisplacement. It is further favored by relaxation or laceration of the pelvic floor which deprives the uterus of its support; by neglect of proper hygiene, as in allowing the rectum and bladder to become habitually

distended; by wearing tight clothing; long standing at or near the menstrual period and much straining and lifting. Probably tight lacing in women who are increasing in flesh is as productive of the disorder as any other one factor.

It is evident from what has been said that a physical examination is necessary for the recognition of the displacement. The patient should have her clothing loosened and lie on a table with her limbs well flexed and separated. The operator with one or two fingers of one hand in the vagina and the other over the abdomen proceeds to the examination. The existence of lacerations or relaxation of the pelvic floor have been apparent at the inspection of the parts and are further recognized with the introduction of the examining fingers. The length from the vaginal orifice to the cervix and the direction of the latter are important. The cervix pointing in the axis of the vagina or forward is generally associated with retrodisplacements, although it should be remembered that ante flexion with a long cervix, or acute ante flexion will place the cervix in the forward position. The combination of ante flexion with retroversion is not an uncommon occurrence. The diagnosis may be made difficult by the presence of fibroid growths in the wall of the uterus, adherent small ovarian tumors, and the presence of masses of inflammatory exudate in the retrouterine pouch. Indeed the uterus may be so surrounded with inflammatory exudate enveloping prolapsed and inflamed tubes and ovaries as to make the determination of its position exceedingly difficult. Usually, however, by the prolonged practice of bimanual examination and securing the co-operation of the patient, the exact position of the uterus is recognized. Its absence in front is a pretty good indication that it is abnormally situated. In large flabby uteri its position is not constant, as the patient may be sent to the gynecologist as a case of retroversion and examination may reveal the body in a normal position. A hasty and superficial investigation may lead to a mistaken diagnosis, but more careful investigation will disclose that the fundus can be displaced into the retrouterine pouch where it will remain until again re-

placed. The easy rotation of the uterus between the hands, so that the fundus is found in the bottom of the pelvis and the cervix upward, is a pathologic condition which will be benefited by proper treatment. In a retroversion, the fingers in the vagina will be able to follow the posterior wall of the uterine body through the posterior vaginal fornix as a straight surface, but in retroflexion there will be a more or less well marked angle or depression in this line depending on the acuteness of the flexion. That the mass below the angle is not a fibroid tumor arising from the posterior vaginal wall is rendered certain by finding the fundus absent from the an-

Treatment.—Until within recent years, the only treatment of retrodisplacement was the employment of mechanical means which consisted of tampons and various forms of pessaries. With the advent of surgical measures, the employment of pessaries has practically been discontinued. It is a serious question whether the advocates of surgery have not in their zeal overlooked the advantages which may be secured through means of less gravity and may be attended with equally good results. It cannot be denied that there are many cases of displacement resulting from subinvolution in which the temporary maintenance of the uterus at a higher



Fig. 1. Proper Position of the Pessary.*



Fig. 2. Faulty Position of the Pessary.*

terior vaginal fornix, by being able to pass the finger high in the lateral fornix and thus allow the curve of the body, and by the regularity of the lines of the fundus. In mobile uteri, the organ can be pushed up until it can be entirely outlined. It is only in women with thick fatty abdominal walls, with extensive inflammatory conditions, and in extremely nervous and sensitive individuals that there should be any uncertainty as to the diagnosis.

From what has been said of the complications rather than the displacement being the cause of the symptoms, it might be inferred that it would be unnecessary to treat the displacement but rather devote our energies to the correction of the complication. It cannot be denied, however, that a long continued uterine displacement is capable of producing a passive congestion of the uterus which renders it more vulnerable to infection, prolongs the inflammatory process and interferes with its recovery as long as the displacement remains.

level promotes the involution of the organ, and with the decreased size the ligaments are capable of maintaining it in its proper place unaided. Women who have recently been confined or have aborted and are found suffering from retrodisplacement should have the organ raised by tampons or a pessary and so maintained until the process of involution has been completed before being subjected to operative procedure. Recent inflammatory bands or masses of exudate fixing the organ in an abnormal position are not to be regarded as necessary indications for resort to surgical measures, for many of these cases can be restored to health and the proper position of the uterus secured by the employment of pelvic massage supplemented by tampons. The presence of suppuration forbids resort to massage, as the condition of the patient would be greatly endangered thereby. When the fixed uterus has been set free, the pessary may well take the place of the tampon. (Fig. 1.) In the employment of

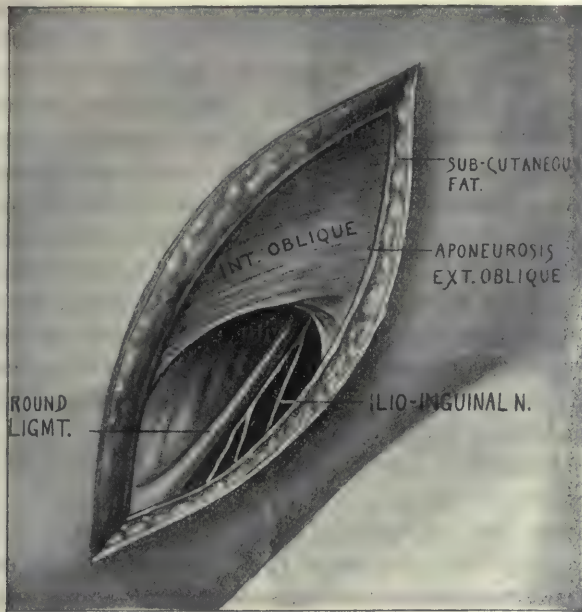


Fig. 3. Alexander Operation; Round Ligament Exposed.*

the pessary, it should be kept in mind that it is a crutch to maintain the organ in position after it has been replaced and not an instrument for the correction of the position. Too frequently the pessary is used without correction of the position, or in cases in which there still exist adhesions between the fundus and rectum, and the result is the uterus is caught between the posterior bar of the pessary and the sacrum and this condition is worse than the original one. (Fig. 2.) The employment of the pessary presumes such a knowledge of mechanics that the gynecologist will be able to adapt the instrument to the condition of the pelvis of the patient and not proceed on the idea that the woman can be made to fit the pessary. As the pessary is a foreign body, every effort should be exerted that it does not make undue pressure on any point and that it is kept clean. The woman wearing it should be kept under supervision and the vagina kept clean with proper irrigation. The employment of the astringent metal salt solutions for this purpose, however, should be advised against, as the salts, being deposited on the surface of the pessary to roughen it as to make the retention of the instrument a source of danger. Where the pessary is worn for a long period of time without observation, it is almost certain to be the cause of trouble. I have seen the instrument so embedded in the tissues that it required the knife for its removal. I would only advocate its use for such cases as can be restored to normal size by a short course of treatment and in chronic cases without much enlargement of the uterus or where the liga-

ments have become overstretched it should give way to other measures.

Among the earlier methods of relieving retrodisplacement, attempts were made to secure the cervix in the posterior fornix of the vagina by obliterating the latter, as suggested by Amussat (1850) with caustics or the cautery. Herrick (1883) sutured the posterior surface of the cervix to the posterior vaginal wall. Goellet made a preliminary freshening of the surfaces, while Nicoledis freshened the anterior lip before suturing it to a freshened point on the posterior wall. Schücking accomplished the same purpose by lengthening the anterior vaginal wall by a transverse incision, which he united to form a longitudinal line and shortened the posterior by the union of a longitudinal incision on a transverse line. The aim of all these procedures was to secure the uterus in proper position by elevating the cervix, when the other end of the lever, the fundus, would fall forward of its own weight, but assumed what did not always exist, that the posterior fornix could be made a fixed point.

A great variety of operative procedures have been instituted which may be divided, according to the route of attack, into vaginal and abdominal, and the latter into the extraperitoneal and the intraperitoneal. The vaginal procedures comprise the



Fig. 4. Round Ligament Being Drawn Out.*

operations devised by Mackenrodt and Duhrssen and variously modified by Küstner, Wertheim, Vineberg, Pryor, and others.

As early as 1888 Sanger advocated securing the fundus of the uterus to the anterior vaginal wall, and Schücking devised an instrument which could be carried to the fundus of the replaced uterus and from which could be thrust a concealed needle car-

the anterior wall of the uterus through scarification and sutures, and Hawley, the fundus to the vesical wall. The vesical peritoneum was separated and carried over and sutured to the posterior surface of the fundus. All these methods of procedure have been found so disadvantageous in subsequent pregnancy that they are regarded as contraindicated during the period of life in which the patient is likely to be exposed to pregnancy. The vaginal route has been advocated for shortening the utero-sacral ligaments, either with or without opening the peritoneum. When these ligaments have not become so attenuated as to render them non-discernible, it is a very useful procedure.

Abdominal Operations: Extraperitoneal: This procedure, known as the Alexander operation, sometimes the Alexander-Adams operation, was first suggested by Alquié, a Frenchman, in 1840, and performed for the first time by Alexander of Liver-

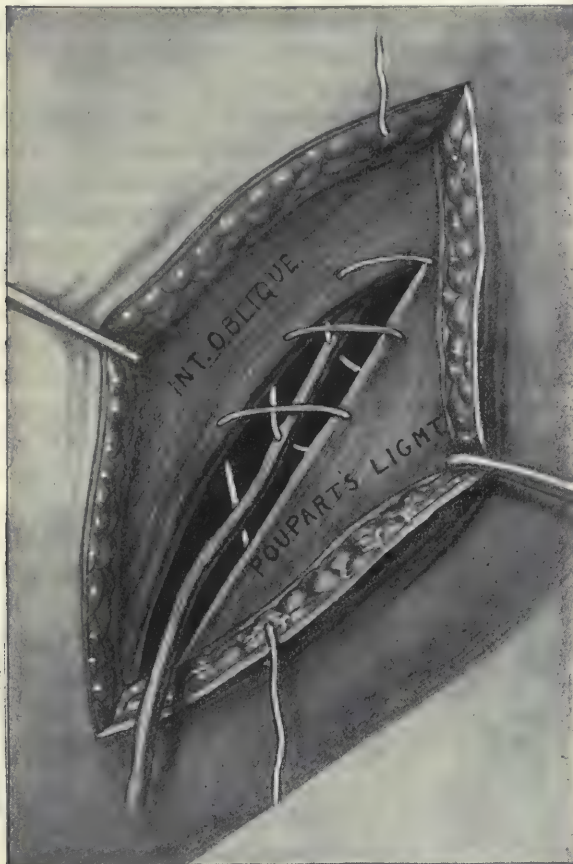


Fig. 5. Round Ligament Sutured.*

rying a suture by which the organ could be secured in place; but injury to the bladder was difficult to avoid. Mackenrodt, through a longitudinal incision in the anterior vaginal wall, inserted fixation sutures in the uterus above the internal os, and Duhrssen through a transverse incision inserted the sutures at a higher level, both without opening the peritoneum. Winter added an anterior colporrhaphy and carried the fixation sutures higher, and Küstner always opened the peritoneum, which procedure was later adopted by Duhrssen. Wertheim suggested employing the vaginal route to anchor the uterus to the anterior abdominal wall, Vineberg, to secure the round ligaments, and Ries to draw the latter through a slit or tunnel in the anterior uterine wall; Pryor, to secure the bladder to

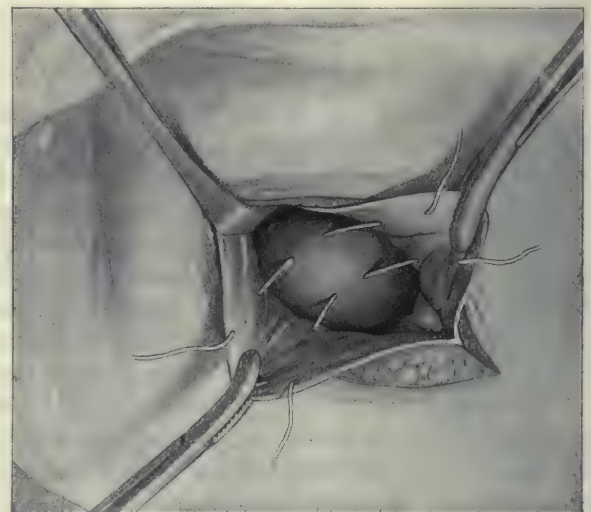


Fig. 6. Sutures Introduced for Ventro-suspension.*

pool in 1881. The first description of the operation was furnished by him in 1883. This operation employs the round ligaments and exposes them through an incision over each inguinal canal; through this the ligaments are drawn out the requisite length to bring the fundus forward and the slack of the ligaments is secured to the inguinal opening. The operation which originally consisted in an incision over the external inguinal opening, the drawing out and fastening of the folded ligament to the orifice has been variously modified; the incision has been made over the internal ring, the entire canal has been opened, the extra portion of the ligament has been cut away, or has been utilized to carry it across beneath the intervening bridge between the two incisions, where the two ends were united by

sutures, or by a loose knot. The two inguinal openings have been exposed by one incision above the symphysis and the peritoneum has been opened on each side, the latter to extend the usefulness of the operation for the treatment of diseased conditions within the pelvis. As originally designed, it has a limited application as it cannot be utilized in conditions where the uterus, ovaries and tubes are the seat of inflammatory complications, and consequently is limited to the cases in which the operation is the least needed. In suitable cases it is capable of affording complete relief and consequently has been a very popular procedure.

Operation.—The skin and superficial fascia is opened by an incision parallel to and just above Poupart's ligament, through which the external ring is exposed. The yellow mass of fat filling this space displaced renders visible the end of the ligament. This is hooked up, separated from its surroundings, and drawn out until it becomes tense. I prefer to follow the course practised by Edebohls and split the aponeurosis of the external oblique muscle, and thus expose the ligament as it lies in the canal from which it is easily raised and drawn out. (Figs. 3, 4, 5.) The ligament is then secured by the sutures which close the canal. The same procedure is followed on each side.

Intra-peritoneal Operations.—The limitations of the blind operation for bringing the displaced uterus forward was at an early date overcome by entering the abdomen. Among the early procedures, the first was the fixing or suspending the uterus to the abdominal wall by sutures, as devised by Ohlshausen, who effected the anchoring by suturing the uterine end of the round ligaments to the peritoneum of the abdomen at either side of the median abdominal incision. This procedure was modified by Kelly, who secured the fundus to the lower angle of the median incision. The operation naturally divided itself into a fixation or suspensory procedure according to the shortness and firmness of the union secured between the uterus and the abdomen.

The occurrence of numerous cases of dystocia in subsequent labors led to the effort to confine the procedure to a suspensory ligament rather than to the formation of a short firm band in all those cases which were likely to be exposed to a subsequent pregnancy. Experience has disclosed that the complications of labor are not the only dangers to which the patient who has undergone this operation may be subject, for the artificial ligament is a source of danger through the possibility of the in-

testine becoming entangled about it and becoming strangulated, or its caliber becoming obstructed. I lost a patient the same day of the operation from strangulation of the intestine.

Operation.—Through a median incision adhesions are separated, diseased conditions of the tubes and ovaries treated and the uterus secured to the peritoneum of the lower angle of the wound by two sutures through the fundus just posterior to the line of the tubal orifices. (Fig. 6.) Fowler passed the urachus through the fundus as a suspensory ligament, and Franklin Martin a rope of the parietal peritoneum. Probably no operation for the correc-



Fig. 7. Wylie's Operations for Shortening the Round Ligaments Within the Abdomen.

tion of displacements had, for a time, greater popularity. It has, however, the disadvantages that the uterus is put in an unnatural position; the operation can never be positive that the purposed suspension may not prove a fixation; the ligament is necessarily a cicatricial one, which, when it becomes stretched, has no power of regaining its power except by a repetition of the operation; if firm, it serves as an impediment to the comfortable progress of following pregnancy, and if long, becomes further attenuated or destroyed and the displacement recurs with the recovery from the pregnancy. Next, various operations on the intra-abdominal portion of the round ligament were instituted, as folding it inward, and outward (Fig. 7), securing the folds by sutures; so plicating the ligament that when sutured, three layers of the ligament are in contact as in the Mann operation; dragging a fold of each ligament through the broad ligament and securing it behind the fundus, as suggested by Webster, or cutting off the ligament and drawing its distal end through the broad ligament and suturing it low on the posterior wall (Baldy); drawing a loop of each ligament

through a tunnel or slit in the anterior wall of the uterus (Ries); suturing a loop of each ligament on a denuded surface of the anterior wall (Desmopycnosis of Dudley); cutting out a section of the round and splitting the broad ligament, subsequently uniting the ends of the round ligament so that the line of union shall be at right angles to the incision (Bissell); and suturing a fold of each ligament on the undenuded front of the uterus as far as the vesico-uterine duplication and a second to the insertion of the round ligament at the side of the

son); carrying the loop through an opening in the anterior surface of the broad ligament and then upward, securing it to the under surface of the rectus muscle (Simpson); carrying the loop between the layers of the broad ligament until the abdominal wall was reached and then through the latter, where it is secured to the external surface of the aponeurosis (Montgomery); passing a hemostat from without in and securing the ligament external to the peritoneum and drawing the loop through the wall where it is fastened (Mayo, G. H.



Fig. 8. First Step in My Modification of the Gilliam Operation for Securing Round Ligament Support.*

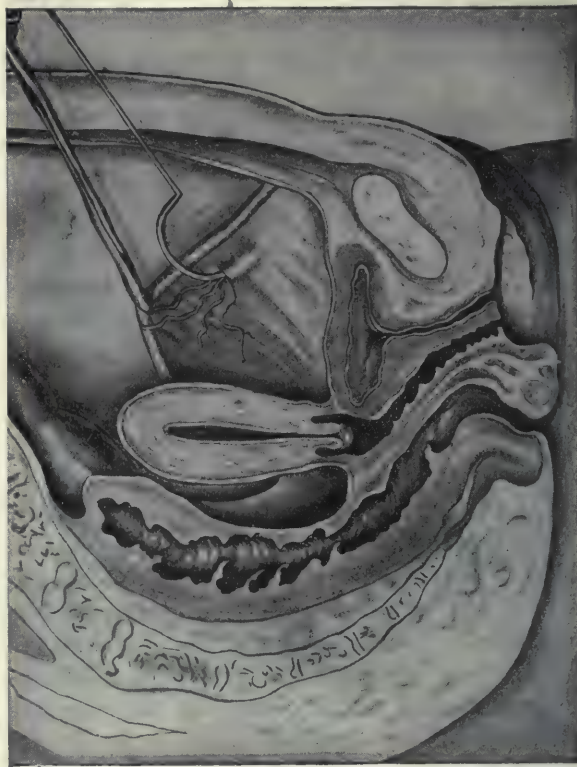


Fig. 9. Second Step, Showing Ligament Fixed With Hemostat While Temporary Ligature is Carried Beneath Anterior Leaflet of Broad Ligament With a Deschamps Needle.*

uterus (Coffey). All of these procedures employ the best portion of the ligament and leave its weakest part, that in the inguinal canal, without reinforcement. This statement applies less strongly to the procedure of Coffey than to those of the others, inasmuch as the latter is dependent on the peritoneal surfaces rather than the round ligaments for support.

Efforts to more effectually utilize the best portion of the round ligament were made as follows: By plunging a hemostat through the abdominal wall external to the rectus muscle, a loop of the round ligament was seized and drawn through onto the aponeurosis and there sutured (Gilliam); supplementing the above by closing the peritoneal space external to the loop with a catgut suture (Fergus-

Noble). It is certainly not unnatural for a father to see more in his child than can be discerned by others, which is possibly the reason why the writer of this paper is inclined to advocate the modification which bears his name as superior to all others. It is performed as follows:

1. Either a median or Pfannenstiell incision.
2. Separate adhesions and treat diseased conditions of the tubes and ovaries.
3. Pick up the round ligament one and one-half inches from the corresponding cornu of the uterus and pass a suture beneath it, the ends of which are temporarily secured with a hemostat. (Fig. 8.)
4. After passing the suture around the second ligament, thread the ends of the suture into the eye of a Deschamps' needle; have an assistant keep the

ligament taut by holding it with a hemostat; make a small opening in the anterior leaflet of the broad ligament, through which the needle armed with the two ends of the suture (Fig. 9.) is carried outward between the layers of the broad ligament until the reflection of the parietal peritoneum has been passed when it is thrust through the wall. The same course with the second ligament.

5. The suture is drawn taut and followed with a sharp pointed scissors with the blades closed, and then they are slightly separated as withdrawn, when traction on the ligament results in the loop being



Fig. 10. Operation Completed. Differs from Gilliam-Ferguson in Having No Internal Sutures.*

drawn through. Should it not come at once, a little pressure with the point of the scissors while traction is being made with the suture will readily tease it through. (Fig. 10.)

6. Secure each loop to the surface of the aponeurosis with chromic catgut sutures, making sure that the loop is not strangulated by including too large a portion of it in the suture.

7. Close the wound.

It is particularly important to the ready and expeditious performance of this operation that the assistant should maintain traction on the ligament while the suture bearing needle is passed through the broad ligament, other-

wise the tissues roll up in front of the instrument, and it is doubtful what course it will pursue. The advantages of this procedure are that it permits the inspection and treatment of diseased conditions complicating the displacement; maintains the uterus forward and yet permits it to remain a movable organ; utilizes normal forces and exercises the force in a normal direction; secures the forward position of the uterus with natural ligaments, capable of involution and evolution and consequently more likely to endure the vicissitudes of pregnancy and the puerperium; and finally, leaves no raw surface for the formation of unfortunate adhesions.

While I believe this procedure with the Pfannenstiel incision accomplishes the desired purpose, in suitable cases, with less mutilation, internal and external, than in any other now practised, I would not wish to be understood that it is in all cases to be preferred to every other procedure. Here, as in other conditions, the operation must be adapted to the case, and not the case to the operation. Nothing could be more unfortunate, to depend on either suspension, fixation, or round ligament shortening in retroversion with prolapsus. The conditions of the individual case must be analyzed; in some, it will be necessary to reduce the weight of the uterus by amputation of the cervix; to support the organ by restoration of the pelvic floor; to take off traction by an anterior colporrhaphy, and anchor the bladder at a higher level, and, in some, by shortening of the utero-sacral ligaments either through the vagina or by an abdominal incision.

In several cases, I have shortened the retrouterine pouch by stitching the peritoneum of the posterior part of the cervix to the peritoneum of the brim of the pelvis and the anterior wall of the rectum. This procedure, associated with shortening the ligaments, as has been suggested, ensures the establishment of the uterus across the pelvis and utilizes it to prevent a hernia of the abdominal viscera through the pelvic canal.

* Illustrations from Montgomery's Gynecology, Third Edition, P. Blakiston's Son & Co.

VACCINATION INFECTIONS.

The severe infections following vaccination which surgeons are occasionally called upon to treat, should emphasize for the practitioner the importance of conducting this small operation with strict regard to surgical cleanliness. If this were always done antivaccinationists would be deprived of much of their ammunition. As it is nowadays prepared by reliable manufacturers, smallpox vaccine is but rarely itself responsible for extraneous infections.

TUMORS OF THE URETHRA IN WOMEN, WITH SPECIAL REFERENCE TO MALIGNANT GROWTHS.

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Of all the neoplasms in the genital organs of women, tumors of the urethra are the least common. When they do occur, their size is usually small, the symptoms at first are not severe, except in the case of caruncle, so that the patient is disposed to take little account of them. With the exception again of caruncle, which is usually so distinctive in appearance and symptoms and so comparatively frequent in occurrence that neither the physician or patient is apt to mistake or overlook it,* the presence of a tumor may not be noticed or, if it is detected, the differential diagnosis is not easily established. This is especially true of sarcoma and carcinoma, of all the growths the most important to recognize at an early stage. They may be regarded as a caruncle; or syphilitic hyperplasia with ulceration or even simple inflammatory infiltration may be thought to be malignant.

The difficulty in diagnosis is illustrated by two cases from one of my hospital services. (Howard Hospital.)

In the case represented in Figure 1, a diagnosis of malignant growth was made and the lower half of the urethra was amputated. The patient was 60 years of age, the urethral growth had existed about a year, there had been for some months a bloody discharge and considerable pain. There was necrotic ulceration in the center of the growth, a hard mass of infiltrated hyperemic tissue on the periphery and the appearance was so like an epithelioma that I entertained no doubt of its nature; but to my surprise an expert pathologist reported to me that there was no trace of malignancy. The mass consisted of small cell infiltration with large necrotic areas. The specimen was presented to another pathologist who made the same report.

In contrast with this is the case represented in figure 2. The growth was sufficiently suspicious in appearance to warrant its removal, but I felt by no means certain of its character. The pathological report is appended herewith:—

The original specimen as seen in the accompanying photograph, consists of somewhat more than a centimeter of the external end of the female urethra, with its surrounding tissue, and of a

rounded, dark red caruncle protruding from the external meatus, this projecting body being roughly about 1 cm. in diameter.

Material for histologic section has been taken by cutting a small wedge out of the specimen, so as to include a longitudinal part of the urethral wall and a part of the caruncle.

Under the microscope a part of the basal portion of the caruncle is covered by a layer of stratified squamous epithelium. This has been lost, however, over the summit and greater part of the more



Fig. 1. Diagnosed as Cancer of the Urethra But Pronounced by Two Pathologists to be Simply Inflammatory; Possibly Syphilitic.

exposed surface of the eminence. The structure of this caruncle shows no neoplastic formation. It consists essentially of a highly edematous, suppurative and hemorrhagic connective tissue. The basis is probably the original subepithelial connective tissue of the outer part of the urethral mucosa; this tissue now highly distended and dissected out by hemorrhage and inflammatory exudate which occupy it. The leucocytes present are mainly polynuclear cells, but there are in addition numerous mononuclears and a large number of eosinophilic cells. Fibrin has formed all through the enlarged spaces as a granular and reticular deposit. The

* McMurtry was able to collect only 26 reported cases of carcinoma in 1908.

hemorrhages occur generally in small rounded foci, which at first suggest distended blood spaces; and there are associated with them a number of widened blood capillaries choked with blood. Pigment separation and deposit have taken place and phagocytes loaded with this substance are seen extending in lines through the hemorrhagic foci, and at places beginning attempts at angio-fibroplastic organization are to be noted.

This inflamed and hemorrhagic tissue extends throughout the caruncle and back to the urethral wall proper, but does not extend widely in the lat-

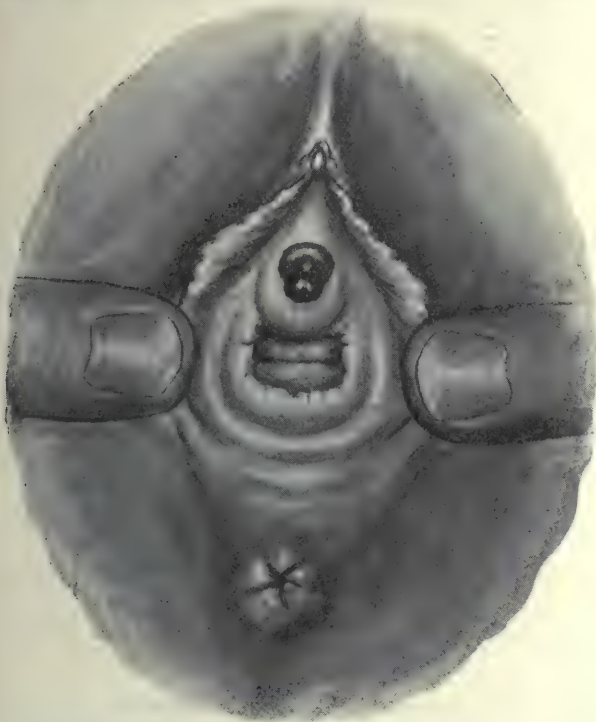


Fig. 2. Urethral Inflammatory Caruncle and Adeno-Carcinoma.

ter. The urethral surface shows its covering of transitional squamous epithelium, broken only by artefact in sectioning, with a few crypt-like depressions caught in the plane of section. There is no appearance that it has undergone any neoplastic change. The immediately underlying fibrous tissue is practically normal, and it is not until close to the muscular layer that important changes have taken place. Here a series of intricate but mainly longitudinal tubes lined by stratified columnar epithelium, and presumably representing Skene's glands are found. At places these are evidently widened and into such widenings at several places papilliform projections of the tissue extend into the lumen. In some of the tubes at the base of the epithelium the membrana propria is clearly seen separating the tissue from the surrounding stroma,

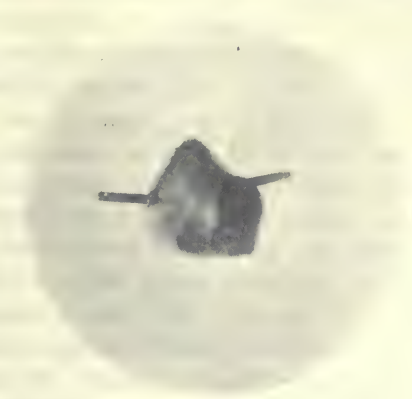


Fig. 3. Gross Specimen.

but there are a number of places where the epithelial layer has been distinctly thickened and where the basement membrane is lost, has evidently been penetrated, and where the epithelium is growing into the stroma in cancerous fashion. In some of the spaces a hyaloid, deeply-eosinated material occurs, sometimes showing concentric lines, suggesting (as has often been observed) a formation identical with, or analogous to, the corpora amylacea of the prostate in the male. The epithelial lining of these tubes is in individual instances edematous and the separated cells of the deeper layers strongly resemble lymphocytes, but their continuity and therefore their identity with the surface columnar cells can scarcely be doubted.

It is of interest to add that immediately beneath the epithelium lining the urethra there was encountered a small diffuse lymphoid patch in which a definite lymph follicle is shown.

Diagnosis.—Urethral inflammatory caruncle growing from an adenocarcinoma of urethra. Allen J. Smith.

In the case represented in figure 5 there could be no doubt about the diagnosis, but unfortunately

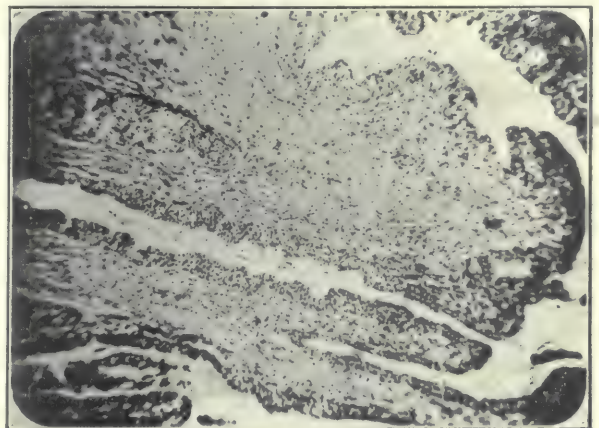


Fig. 4. Micro-photograph of Section.

the disease had become inoperable. The patient was an ignorant old colored woman, unable to give a definite history, but obviously the epithelioma had been in existence for more than a year. The urethra was the site of a deep crater-like ulcer with extensive infiltration of surrounding tissues.

In figure 6 there is represented a most interesting growth—a recurrent sarcoma of the urethra. From its appearance alone this tumor might easily have been regarded as benign. The patient complained of very little annoyance from it except some mechanical interference with urination. Its removal therefore might easily have been postponed or

operation. An indefinite capsule, or at least a fairly clear definition of the tumor tissue from the surrounding urethral tissue becomes apparent in the pedicle and can be followed practically over the whole of the circumference of the projecting part of the growth. The squamous epithelial layer of the urethral mucosa is present upon the pedicle, and here shows evidence of having undergone some hyperplasia, slightly penetrating extensions into the subepithelial tissue being apparent. From the pedicle the epithelium continues partly over the circumference of the projecting part of the growth, rapidly thinning out and being lost over much of this sur-



Fig. 5. Inoperable Cancer of the Urethra.

neglected. But the patient's physician, Dr. P. S. Stout, recognized the likelihood of malignancy from the history of recurrence, after removal three years before, and sent her immediately to my clinic in the University Hospital. The growth was exsected, care being taken to remove considerable tissue around its base. In the nine months that have elapsed since its removal there has been no recurrence and no metastasis. The pathological report is appended:—

Section of this growth shows it to be made up of large spindle cells, very indistinctly demarcated from each other, and set into a finely fibrillar matrix. They have large round to long oval vesicular nuclei, most of which show a conspicuous nucleolus. In the central portions of the growth there are comparatively few bloodvessels and these are uniformly of capillary type. The sarcoma type of tissue extends clearly into the pedicle and to the base and evidently was not entirely removed at

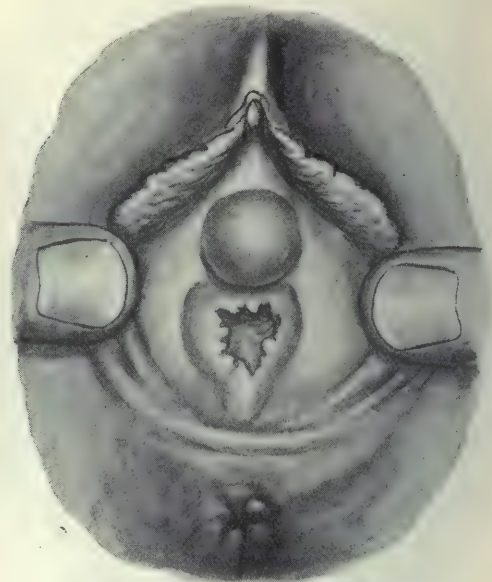


Fig. 6. Recurrent Sarcoma of the Urethra.

face. The subepithelial fibrous tissue of the mucosa is likewise best seen in the pedicle, more or less densely infiltrated with lymphocytes and plasma cells. This sweeping over the growth forms the encapsulation mentioned, but is of varying integrity. For the most part it contains numerous plasma cells, lymphocytes and at places is clearly undergoing fibrosis. It is rich in thin-walled vessels and at places is hemorrhagic, and here and there is some minor hemic pigment deposit. The outer parts of the enclosed tumor are, moreover, much richer in blood channels than the central parts.

No mitoses were found in the sections examined. The section shows practical uniformity of structure of the growth, but now and again there are areas which are so densely fibrillar as to make one think of a true fibroma.

Diagnosis.—Large spindle-cell sarcoma (fibrosarcoma) of urethral wall. Allen J. Smith.

Finally, to further illustrate the uncertainty of diagnosis in urethral growths, the case represented in figure 7, proved to be one of inflammatory origin, the polypoid tumor consisting mainly of a round cell infiltration under the mucous membrane; although the appearance was strikingly like that shown in figure 6, except for the smaller size.

It is plain that the only practical deduction to be drawn from a study of these growths is the necessity of their early and complete removal. If a



Fig. 7. Polypus of the Urethra.

careful examination after removal shows benignancy, so much the better for the patient as regards recurrence. Benign urethral growths are at least provocative of some symptoms and there is always the possibility of malignant degeneration if they are neglected. If they prove, on the contrary, to be malignant they could not have been too early or too completely removed.

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THE SURGICAL TREATMENT OF HEMORRHAGE COMPLICATING PREGNANCY.

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Hemorrhage complicating pregnancy may be treated by a direct or surgical method, or by an expectant or medical plan. Hemorrhage complicating pregnancy may be visible through the discharge of blood from the vagina, or concealed through the retention of blood in the uterus or pelvic or abdominal cavity.

Obviously the choice of a method of treatment for hemorrhage complicating pregnancy must depend largely on the circumstances of the physician. He may not be skilled in surgical methods; he may not have the surroundings to make asepsis possible, nor the assistants necessary to carry out a surgical procedure. His choice may then be not voluntary, but practically one of necessity.

Hemorrhage complicating early pregnancy results from partial or complete separation of the ovum from its attachment to the generative tract. As pregnancy is usually intrauterine, the ovum separates from the wall of the uterus and the resultant hemorrhage is uterine. The causes bringing about this accident are direct mechanical violence, as from a fall, a blow, or injury; interference with the uterus, as in criminal abortion; and disease of the lining membrane of the womb resulting in the rupture of minute bloodvessels, and hemorrhage between the ovum and the uterine wall. Whatever destroys the life of the ovum will also tend to produce hemorrhage, usually preceding its discharge.

Hemorrhage from *threatened or incomplete abortion* is not often concealed, unless a clot forms in the cervix, preventing the discharge of blood from the uterus into the vagina. Such a condition may arise, however, and the uterus become distended with blood which is discharged gradually as a thin sanious fluid, as a large clot, or sometimes with sudden expulsive pain in a copious bleeding.

Uterine hemorrhage complicating intrauterine pregnancy may be mistaken for menstruation or metrorrhagia from fibroid or malignant disease of the uterus. A thorough examination of the patient should be sufficient to establish a correct diagnosis.

Early abortion has long been considered a trivial accident by the general practitioner of medicine and by women. A closer study of these cases shows that while not many die, except after criminal abortion, that the foundation of ill health is

often laid in neglected abortion, and that those conditions which brought about the abortion may be remedied and good health secured by the thorough treatment of this accident.

The expectant or medical treatment of abortion has consisted in rest, sedative medicines, and the application of cold. Hemorrhage has continued indefinitely, the patient has suffered from anemia, and has often gotten up with subinvolution and perimetritis, which have caused ill health and often sterility. In proportion as the individual was strong and healthy, accustomed to exercise, and has gotten up sufficiently early after the abortion to secure thorough drainage, her recovery has been satisfactory. But in women of poor muscular fiber, unaccustomed to exercise, with deficient excretion and assimilation, complete spontaneous recovery from abortion is by no means the rule. Rest and the use of drugs in these cases is seldom completely successful.

The surgical treatment of hemorrhage in abortion tends to control it promptly, removing its cause, preventing infection, and securing the speedy return of the uterus to its normal condition. Where chronic endometritis with flexion has preceded conception, the surgical treatment of abortion improves the health of the patient and favors subsequent successful pregnancy.

As most of these cases occur in nervous and sensitive individuals, surgical anesthesia is requisite. Asepsis is imperative and antiseptic precautions in addition should be taken. With the patient under anesthesia by a competent person, the operator should assure himself that the uterus is dilated sufficiently to permit the expulsion of the ovum, and if this has already separated it should be removed. It must be remembered that no abortion can be complete at one sitting. The hypertrophied uterine mucous membrane must be discharged, the syncytial fetal tissue must die and be expelled before the uterus can return to its normal condition. In the present state of our knowledge the sharp curette is discarded in the treatment of these cases, and if the ovum be found separated after the operator has dilated the womb sufficiently to introduce one or two fingers, the ovum and débris may be brought away by the fingers. Experience shows that if the ovum has not separated it is almost impossible to deliver it completely. Under these circumstances, so much should be brought away as can be delivered by the fingers, and a packing of aseptic or antiseptic gauze should be introduced, making firm pressure, checking the hemorrhage, and hastening the necrosis of the syncytial and uterine

mucous membrane, thus favoring their early discharge. The gauze packing secures drainage, improves the position and curve of the uterus, stimulates uterine contraction, and thus favors involution.

In doing this operation the writer prefers solid dilators, which wound the cervix less than the branched or bladed dilators. The solid bougie is large enough in all cases of abortion occurring prior to the formation of the placenta. After that time it may be necessary to dilate the cervix by Bossi's dilator, cautiously used, to a very slight extent. The danger of perforation of the uterus by instruments must be kept in mind, but if the fingers cannot reach to the uterine fundus a blunt spoon curette should be employed, the sharp curette being declined. After the operator has brought away such débris as comes readily he may cautiously sound the womb, and finding its wall intact he may then irrigate the uterine cavity through the curette with warm salt solution, or lysol, one per cent. Before introducing the packing, the largest sized solid dilator should again be introduced, as the uterus will contract under the stimulation of the finger or curette. To insert the packing, the operator must keep in mind the curve of the uterus, and in cases of sharp ante flexion or retro flexion caution is required, not only in curetting or sounding, but in packing as well. When the packing has been inserted the vagina should be moderately distended with sterile or bichloride gauze, tied to the end of the uterine strip, the cervix being carried backward, and the vaginal packing and the uterus raised in the pelvic cavity. This gauze may remain from forty-eight to seventy-two hours, and its removal should be followed by thoroughly cleansing the vagina with gauze or cotton dipped in bichloride solution, 1-4000. No uterine or vaginal douching is required. In women of deficient nervous and muscular strength tonic doses of strychnia and ergot may be given to advantage so soon as the packing is removed.

The question will naturally arise, "Will not the abandonment of the old expectant treatment of abortion result in sacrificing many ova which otherwise might have retained sufficient adherence to the uterine wall to develop to full term?" In our experience, by far the larger proportion of all cases of threatened abortion result in the death of the ovum. Where we have tried to continue the pregnancy by the expectant treatment, we have been disappointed by the final discharge of the dead ovum after an indefinite period of hemorrhage varying in quantity and sufficient to considerably

deplete the patient. As has been stated, in our experience the surgical treatment of early abortion has frequently been followed by conception resulting in successful pregnancy, going to full term. While it cannot be denied that few women die from hemorrhage in early uterine abortion, many recover with impaired health and suffer from repeated abortion afterward.

In cases where vaginal hemorrhage cannot be distinctly recognized as coming from early pregnancy, and where the diagnosis is difficult, a surgical examination of the uterus under anesthesia is indicated. A blighted ovum may thus be safely removed, and even if such cannot be accurately located at the time, when the gauze packing is removed, it will be found adherent to the gauze. If the case suggests malignancy, sufficient tissue may be removed for microscopic examination. The existence of fibroids can be recognized by the examination under ether, and if chronic endometritis be present curetting and packing will greatly improve the patient's condition. In these cases the fallacy of escharotic injections has been abundantly demonstrated, and the superiority of gauze pressure has been shown. The injection of iodine or of iodoform in emulsion is often useful, but does not fulfil the same indications.

Intrapelvic or intraabdominal hemorrhage complicating early pregnancy usually results from *ectopic gestation* with or without abortion. The symptoms of tubal abortion and of rupture, or unruptured cornual, tubal and ovarian pregnancy are so familiar that they do not require description in this paper. The recognition of intrapelvic or intraabdominal hemorrhage complicating or even suggesting early pregnancy places upon the physician responsibility sufficiently grave to demand an exact diagnosis and prompt treatment.

Early intrauterine abortion may be mistaken for ruptured ectopic gestation, and extrauterine pregnancy, with or without rupture, may be overlooked in the belief that intrauterine pregnancy exists. When in doubt, examination of the patient under ether, and the removal from the uterus of the characteristic decidual cells, should clear up the diagnosis.

The surgical treatment of hemorrhage complicating ectopic gestation demands the best judgment. When the condition is recognized its seriousness is comparable to that of central placenta previa, and the patient must be constantly under accurate observation. The danger of unnecessary operation is less than the danger of an emergency operation in the presence of overwhelming bleeding, and so soon

as there is reasonable ground to suspect ectopic gestation the abdomen should be opened, if the patient's condition justifies it, and the conditions thus revealed should receive proper treatment.

The question as to whether immediate or deferred operation should be chosen has occasioned wide discussion. Here each case much be judged upon its merits, and a decision cannot be wisely reached without taking into consideration the circumstances surrounding the patient. In the face of sudden and severe hemorrhage with great shock, immediate operation may turn the scale against the patient; but, although the operator may not dare to proceed, he cannot leave the case, for experience has shown that although the hemorrhage may spontaneously cease or grow less, it will almost certainly recur, and death usually follows recurrent hemorrhage. In these cases preparation should be made for operation and the patient closely watched and given such treatment as will enable her to rally from the initial shock. So soon as her condition justifies it, operation is the only safe procedure. In desperate cases it is often impossible to transport patients to a hospital, as transportation may excite renewed hemorrhage. The operator must be prepared to establish the essentials of asepsis in the patient's dwelling, and there operate at the favorable moment.

In operating the median incision is preferable, as it permits the widest inspection of the pelvic viscera. With the least possible disturbance, the site of the hemorrhage should be located, the bleeding vessels secured and tied, and the ruptured tube or ovary removed. If the embryo can be found it should also be removed. No time should be lost in attempting the complete delivery of all the blood clots in the pelvis or abdomen, and when the hemorrhage has been controlled, the abdomen should be closed as rapidly as possible, with the introduction of a moderate quantity of salt solution. In stimulating the patient after such an operation the mistake of introducing too large a quantity of salt solution into the vessels must be avoided, as this sometimes favors renewed hemorrhage. In dealing with ruptured cornual pregnancy, hemorrhage will not be completely controlled, without excising the torn uterine and tubal tissue, removing the tube, and closing the uterine wall accurately.

In old cases of ruptured early extrauterine pregnancy with hematocele the effort has been made to secure the gradual discharge of the clot, with the cessation of oozing, by vaginal incision and drainage. This method does not permit of an accurate diagnosis of the pelvic condition, and is rarely,

if ever, to be selected. Where an hematocoele has become infected, and oozing has long since ceased, vaginal incision and drainage may be appropriate.

Early pregnancy is rarely complicated by *hemorrhage from ruptured veins of the broad ligaments*. It would be difficult to diagnosticate this condition before the abdomen is opened, and the symptoms which it produces would guide the operator in recognizing the necessity for operation. The ligation of the veins is indicated in these cases.

Intrauterine pregnancy with retroflexion of the uterus in women of relaxed muscular fiber, may be accompanied by oozing vaginal hemorrhage closely simulating ectopic gestation. In the writer's experience, the opening of the abdomen revealed the condition present, and it was possible to release the fundus of the uterus and to bring it into normal position. Some days afterward uterine contractions occurred, accompanied by the expulsion of a large lamellated clot containing a blighted ovum.

In later pregnancy, hemorrhage requiring surgical treatment may occur from the *premature separation of the normally implanted placenta*, from *placenta previa*, from *rupture of the uterus*, and from *ruptured abdominal pregnancy*.

Hemorrhage from *separation of the normally implanted placenta* may be accompanied by vaginal hemorrhage, or without this, may remain concealed. If vaginal hemorrhage be present the recognition of pregnancy and the tracing of the hemorrhage to the uterus, will establish the diagnosis. If hemorrhage be concealed, its existence must be recognized by the constitutional signs produced by bleeding, and especially by the reaction which, in the early stages of hemorrhage, the uterus manifests to the presence of a clot within its cavity. The patient complains of considerable pain, usually sharp in character; the uterus early in the hemorrhage is hard and sensitive to the touch, remaining contracted without relaxation, and as the clot enlarges the patient's suffering becomes greater, until the loss of blood causes the symptoms of shock and prostration to overshadow her pain.

Before viability, separation of the normally implanted placenta may best be dealt with by anesthetizing the patient, dilating the womb sufficiently to introduce several fingers, and if possible, delivering the ovum and the placenta, if loosened. If the afterbirth has not separated entirely after the delivery of the fetus, the womb should be thoroughly tamponed, and tonic doses of strychnia and ergot given. The patient will ultimately expel the placenta and blood clots, and if subsequent hemor-

rhage occurs the uterus may again be tamponed and the bleeding checked. Bossi's dilator is efficient in these cases, if skilfully and carefully used, dilatation being carried to only one-third or one-half the full capacity of the instrument.

In the latter months of pregnancy accidental separation of the normally implanted placenta is dealt with successfully and promptly by vaginal Cesarean section. With competent assistance, and under favorable surroundings, the anterior vaginal fornix is incised laterally and the bladder and subjacent tissue are pushed upward and out of the way. The anterior lip of the cervix is incised longitudinally, the incision extending through the lower uterine segment. The uterus is emptied as completely as possible, and is firmly packed with gauze, and the incision is immediately closed. The results of the operation in these cases have been usually favorable. The operation is not one for inexperienced operators, or for those who cannot command the essentials of surgical asepsis and antisepsis.

Hemorrhage from *placenta previa*, differs in severity and danger with the variety of placenta previa present. Obviously a marginal or lateral placenta previa is less dangerous than a partial or central placenta previa; yet the former are not without serious consequences, for in these cases the patients often suffer from irregular and continued hemorrhage, whose cause is not recognized, which greatly depletes them, and which favors the occurrence of septic infection in labor.

The diagnosis of marginal and lateral placenta previa may be greatly aided by careful auscultation of the abdomen. If the placenta be upon the anterior uterine wall its bruit may be recognized by placing the stethoscope just above the pelvic brim. In patients with thin abdominal walls and relaxed tissues it is occasionally possible to recognize the situation of the placenta by palpation. The management of this condition rarely requires radical operation. If the presenting part enters the brim of the pelvis, the tendency to hemorrhage is less; and if the membranes be ruptured and the uterus be made to contract, hemorrhage can thus be controlled by the pressure of the fetus against the placenta, compressing it against the uterine and pelvic wall. It is rarely necessary to interfere with these cases until the first stage of labor. If the cervix be resisting, and the child be alive, the cervix may be sufficiently dilated under ether to introduce an elastic bag, first rupturing the membranes and passing the bag within their cavity to

make direct pressure against the placenta. Sufficient amniotic liquid may thus be retained to protect the fetus from pressure while hemorrhage is controlled and the dilatation of the cervix expedited. If the cervix be largely dilated and the membranes intact, their rupture and the stimulation of the uterine muscle will cause the fetus to descend, and check the hemorrhage by pressure. The accoucheur may then deliver the patient by forceps or version when the conditions demand it. He should, however, be on his guard against post-partum hemorrhage, for delivery may be followed by partial separation of the placenta, if free bleeding occurs, until the placenta has been delivered. After it has been emptied, the womb should be firmly tamponed with sterile or antiseptic gauze, and the vagina moderately tamponed. In dealing with central placenta previa it must be remembered that the patient may not be sufficiently alarmed by the hemorrhage which occurs in these cases in the later weeks of gestation to report promptly to her physician. Repeated hemorrhage may finally frighten her sufficiently to bring her to his attention, and he may find evidence of considerable loss of blood. The management of these cases is essentially that of marginal and lateral placenta previa, except that the indication for interference is more emphatic for the hemorrhage is greater, and the patient's danger is correspondingly increased. Post-partum hemorrhage will also be more severe.

In central placenta previa it is not so much the choice of the method of treatment as the promptness with which it is carried out and its early performance, which bring good results. Few general practitioners, making a diagnosis of extrauterine pregnancy would delay in seeking counsel or taking measures to adequately meet the situation. The general practitioner diagnosing central placenta previa sometimes does nothing while the patient suffers repeated hemorrhage, and frequently does not take alarm until she is in a serious condition. The need for prompt surgical treatment in central placenta previa is as great as in ruptured ectopic gestation, and the mortality of the former will not be materially reduced until this fact is recognized.

In selecting the method of treatment, one must carefully study the condition of the cervix. The attachment of the placenta to the cervix renders it much more vascular, in many cases softer, and in all cases more easily lacerated and infected. If the woman is in good condition, having had but slight hemorrhage, and the fetal heart sounds are strong

and regular, the operator is responsible for not only the life of the mother but also the life of the child. It is true that he may, if necessary, sacrifice the child in the interest of the mother; but it is also true that this should not be done if it is not necessary.

Experience has shown that in central placenta previa the rapid dilatation of the cervix by metal dilators is an exceedingly dangerous procedure. Severe laceration opening into the pelvic or peritoneal cavity, with profuse hemorrhage, has followed such a course. If the cervix is to be dilated and the fetus delivered through the vagina, the womb must be opened in such a way as to lacerate as little as possible, and at the same time to control the hemorrhage during dilatation by pressure. The performance of vaginal Cesarean section in central placenta previa is contraindicated because of the great vascularity of the cervix and lower uterine segment, and the fact that the inevitable hemorrhage must greatly obscure the field of operation.

If the life of the fetus is to be considered, and the cervix is soft, partially dilated or dilatable, the operator may anesthetize the patient, perforate the placenta with the fingers sufficiently to introduce a good-sized elastic bag through its substance, and gradually dilate this bag to its fullest capacity. Pressure will thus be made upon the placenta and uterine vessels, hemorrhage will be checked, uterine contractions excited, dilatation furthered, and the way opened for delivery by forceps or version. It is well to introduce the largest sized bag which can be employed to avoid the necessity for changing the bags before delivery. When the bag has been inserted the operator must closely watch it, standing ready to interfere should labor become active, or should considerable hemorrhage occur. This method of treatment in European clinics has largely superseded the use of the vaginal tampon of gauze which was formerly employed to control hemorrhage by pressure, soften the cervix, and further dilatation.

If the cervix be soft and partially dilated or dilatable, and the life of the fetus is not to be considered, the operator may anesthetize the patient, separate the placenta sufficiently to introduce the greater portion of the hand, dilate the cervix, grasp a leg of the fetus, and bring down the lower extremities and breech into the cervix, using the fetus as a plug or tampon. He should not proceed to extraction, but should allow the fetus to remain in the cervix until spontaneous uterine contractions occur

and ample time has been given to stimulate the mother. In such a procedure the fetus almost inevitably dies from the loss of blood and asphyxia, but dilatation is accomplished without extensive laceration, and the method is the conservative one so far as the life of the mother is concerned. Several hours may elapse between the bringing down of the fetus and its final expulsion. At this time the operator must be prepared to check severe post-partum hemorrhage, removing the placenta and débris promptly, and thoroughly tamponing the uterus and vagina. Cervical lacerations, which cause hemorrhage, should be closed by suture.

In cases of central placenta previa where the cervix is not dilated, and but little if at all softened, and where the cervical tissues are resistant, abdominal Cesarean section offers for mother and child the best chance of recovery. Experience has abundantly demonstrated that abdominal section is less dangerous than vaginal Cesarean section or rapid dilatation of the resisting and unshortened cervix in these cases. If the patient has had but slight hemorrhage and the fetus is in good condition, the fetal life is usually saved. Following the extraction of the child the placenta should be removed, the uterus thoroughly irrigated by pouring hot salt solution through the incision, and the cervix dilated from above sufficiently with the fingers to permit the passage of gauze through it into the vagina. The uterus should be thoroughly tamponed through its open wound, the end of the gauze emerging into the vagina. In planning the incision, the operator should incise the uterine muscle toward the fundus, carefully avoiding the lower uterine segment, which in these cases is often unusually vascular. After packing, the uterus should be closed in the usual manner. The gauze may be removed through the vagina in thirty-six hours after the operation without difficulty. Abdominal Cesarean section is unnecessary in central placenta previa with a partially dilated or dilatable cervix, but with a resistant undilated and unshortened cervix, experience has proven its value.

In *rupture of the uterus* the operator must decide to empty the womb by the vaginal or abdominal route. If it is evident that but a small portion of the fetus protrudes into the abdomen, and the head is presenting in the pelvic cavity, the fetus should be withdrawn through the vagina and the hand introduced, following the umbilical cord to the placenta. In cases of slight rupture the placenta is usually found within the uterus. It should be removed manually, the womb emptied of clots,

packed with gauze without irrigation, and a strand of gauze passed through the point of rupture into the pelvic cavity. Tonic doses of strychnia and ergot should be administered. The gauze allowed to remain from twenty-four to seventy-two hours; on its removal the uterus should not be irrigated, but the vagina should be thoroughly sponged out with gauze dipped in bichloride solution, 1:4000.

If it is evident that a considerable portion of the fetus has escaped from the uterus into the abdomen, abdominal section is indicated. Here, as in the case of ruptured extra-uterine pregnancy, transportation to hospital seems to increase the mortality accompanying the operation. On opening the abdomen the fetus and its appendages must be removed cautiously. The rent in the uterus will usually be found irregularly transverse through the lower uterine segment on the anterior or posterior wall. If it be of considerable size, hysterectomy is indicated. If considerable blood has escaped into the abdominal cavity, and the conditions are favorable for infection, a gauze drain should be employed for thirty-six hours, passed to the bottom of the pelvic cavity. If possible, one or both ovaries should be left to avoid an artificial menopause. In exceptional cases where the rent is not large nor irregular in outline, the uterus may be repaired and allowed to remain. In most cases hysterectomy is the safer procedure.

In dealing with *abdominal pregnancy in the latter months of gestation*, should intra-abdominal hemorrhage occur, section is immediately indicated. After removing the child and ligating and cutting the cord, the operator must decide whether it is safer to attempt the entire removal of the placenta, or leave the placenta, tamponing the cavity of the membranes tightly, and thus hoping to check hemorrhage until the placenta may be safely removed. Experience shows that fatal hemorrhage has often accompanied the immediate removal of an intra-abdominal placenta. Occasionally at the sixth or seventh month the placenta is found so attached to the broad ligament that its point of attachment can be ligated. In these cases it may be safely removed, but if attached among the intestines or to the peritoneal tissues at the sides of the pelvis, its complete removal may be impossible without fatal bleeding. If it is thought best to allow it to remain, the gauze should be gradually removed, the operator being prepared at each dressing to renew the entire tampon as tightly as possible to check hemorrhage.

The expectant or non-surgical treatment of hemorrhage in early pregnancy, we have already found to consist of rest and the use of sedative medicines. Experience has shown that while death may not occur under this treatment, convalescence is prolonged, health may be permanently damaged, abortion may be repeated, and sterility sometimes result.

It is equally true that many cases of ruptured extrauterine pregnancy will not die without operation. But even under the most favorable circumstances, with the patient in hospital, convalescence is prolonged and these patients do not recover their health completely until operation, although deferred, has been performed. In early pregnancy, whether intra- or extrauterine, surgical treatment to-day offers the best chance for life and health. The choice of the time, the place, and the manner for applying this treatment, will often test severely the judgment of the operator.

The non-surgical expectant treatment of placenta previa has proven disastrous in the great majority of cases. The effort to control such bleeding by rest, sedative medicines and astringent injections, is too uncertain and too prolonged to commend itself. To trust to nature in these cases is followed by disaster. Rupture of the uterus demands interference under anesthesia and with aseptic precautions, which constitute a surgical procedure. The good judgment and skill of the obstetric surgeon will often save the uterus after this accident. Hemorrhage in intra-abdominal pregnancy has sometimes resulted in the death of the fetus and its indefinite retention in the abdominal cavity. The danger and delay incident to such a procedure would naturally lead to the choice of surgical methods.

BLOOD CULTURES IN MASTOID DISEASE.

Until within recent years the evidence of a general bacterial invasion of the blood with the formation of numerous pyogenic foci, founded mainly on the symptomatology, was considered of grave prognosis. But since the medical profession, through the researches in the bacteriological laboratories, has come to have a clearer understanding of the bactericidal activity of the blood serum, great hope of recovery has been held out in these cases, especially when there has been a possibility of discovering the "pus focus" and removing it. *The value of the blood culture as a matter of routine in all cases where there is an intermittent or remittent temperature with chills, can hardly be overestimated.*—HAROLD HAYS in the *Chicago Medical Recorder*.

THE DIAGNOSIS AND TREATMENT OF EXTRAUTERINE PREGNANCY.

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The term ectopic pregnancy is said to have a broader meaning than extrauterine pregnancy and has reference, not only to the development of the fertilized ovum outside of the uterine cavity, but also to pregnancy which occurs in some congenital malformation or diverticulum of the uterus. The terms, however, are used interchangeably.

Ectopic gestation is fortunately at the present time more positively recognized and holds a more prominent position in the study of the diseased conditions of the female pelvis than it did in previous years. However, it was studied several centuries ago and the condition was described as early as 1669 by Riolanus, Benedict Vassal and by De Graff. Indeed, even in 1500, Nufer performed abdominal sections for this malady, and Dirlewang in 1549, used the same method of intervention in a case of this condition. Moreover, Bohmer in 1752, in a series of studies differentiated the tubal, ovarian and abdominal forms of this affection, and Schmidt in 1801 described the interstitial or tubo-uterine variety. Before extrauterine pregnancy was recognized clinically and post-mortem, observers were much misled as to its frequency, and, therefore, such statements as those made by Hennig in 1876 to the effect that: "the affection is so rare that the directors of large obstetrical clinics might never see a case" were not surprising. On the other hand, the data now available might readily lead one to suppose that the frequency of ectopic gestation has markedly increased since that time. Thus, Parry in 1876, was able to collect only 500 cases that had been reported up to that period; while in 1802 Schrenk collected 610 cases that had been reported in the five preceding years. This increase, however, is more apparent than real and, fortunately for our patients, is unquestionably due to our improved methods of diagnosis and greater knowledge of the subject. Perhaps the present intelligent study and treatment of ectopic pregnancy dates from 1883, when Tait performed his first abdominal section for ruptured tubal gestation.

Frequency.—Much diversity of opinion exists as to the proportion of extrauterine to intrauterine pregnancy, and the exact proportion is, of course, difficult to determine. It is said by some observers to be about one in 500. Winckel, however, saw but

16 cases in 22,000 births, while Formad found 35 ectopic gestations in 3,200 autopsies. During the year 1908, in twenty of the largest hospitals of this city, 90 patients were operated upon for ectopic pregnancy, while during the same period 31,313 births were reported to the Division of Vital Statistics of the Bureau of Health, thus showing the occurrence of almost three cases of ectopic gestation in every thousand births reported. If the great number of still-births and miscarriages were added, I feel that one could figure a proportion of one extrauterine pregnancy to every 250 intrauterine pregnancies. Indeed, it is a question whether this is not a very moderate estimate. In 220 gynecological operations performed at the Jefferson Hospital, 7 were for ruptured ectopic pregnancy.

Classification.—Several varieties of ectopic pregnancy have been described. The following, however, are those most frequently referred to by prominent authors: When the fecundated ovum undergoes developmental changes in that portion of the tube in juxtaposition to the uterus, it is designated a cornual, tubouterine or interstitial pregnancy. This is fortunately a comparatively rare type of the lesion, but an extremely serious form, for the reason that when rupture takes place bleeding is very severe. When the pregnancy is arrested in the ampulla of the tube, it is designated ampullar pregnancy. This is the most usual form of tubal gestation for the reason that the lumen of the tube has its greatest diameter in this situation and, therefore, it is more favorable for the reception and implantation of the fecundated ovum. When the pregnancy is located near the abdominal ostium of the tube and the ovary is attached to the fimbria of the tube, thus assisting in the formation of the gestation sac, it is called a tubo-ovarian pregnancy. When the ovum develops in a Graafian follicle, it is known as a primary ovarian pregnancy. This condition is extremely uncommon and some observers assert that it never occurs. There is abundant evidence, however, to show that ovarian pregnancy does exist. Spiegleberg reported such a case in 1878. To establish the diagnosis of ovarian pregnancy, Spiegleberg demands the following: The tube on the affected side must be intact; the fetal sac must occupy the position of the ovary; it must be connected with the uterus by the utero-ovarian ligament and definite ovarian tissue must be demonstrable in its wall. James A. Kelley and A. Louis McIlroy report a case of ovarian pregnancy with characteristic macroscopic and histologic findings. They report eight other cases to further prove the existence of ovarian pregnancy. J. Clarence Webster, in July,

1904, reported a case of ectopic pregnancy developing primarily in the ovary. H. W. Freund and R. Thomé reported a case in 1906 which they regarded as a primary ovarian pregnancy. D. T. Hewetson and J. Lloyd, in 1906, reported a case of ectopic pregnancy which, from their investigation, they regard as one of primary ovarian pregnancy.

If the ovum develops in the abdominal cavity, it is called abdominal pregnancy, and this as a primary condition is extremely rare. It is, as a rule, secondary to tubal pregnancy, the ovum usually being discharged into the abdominal cavity either by tubal abortion or by rupture of the tube. Several varieties of secondary abdominal pregnancy are also described, but the limit of this paper will not permit of their discussion.

Etiology.—The causes of ectopic pregnancy are predisposing and essential. Tumors in and about the tube causing obstruction of its canal, the persistence of fetal type of tube, such as small lumen and convoluted tubes; peritoneal adhesions constricting, distorting and causing malposition of the tubes; congenital abnormalities of the tube and the various forms of inflammatory diseases causing the destruction of the propelling ciliated epithelium lining the tubal canal, interfering with the normal tubal secretion, distorting, thickening and stiffening of the tubal wall, thus destroying the normal tubal peristalsis, are all mentioned as factors in obstructing a fertilized ovum. Perhaps the most important of the predisposing causes, is the loss of the normal peristaltic action of the tube. The destruction of this function allows the fertilized ovum to abide a longer time than usual, and in its passage, reach such a size as to prevent its ingress into the uterus. Beside the above-named conditions, certain changes in the ovum itself predispose to its delay in passage through the tubal canal.

Essential Cause.—While the conditions above named are frequently present it is, notwithstanding, a matter of observation that tubal pregnancy may occur in an apparently normal tube. J. Clarence Webster affirms that in ectopic pregnancy there is a genetic reaction in the tube which is essential to the implantation and development of the ovum as truly as is a similar genetic reaction of the uterus essential to uterine gestation. He claims that the decidua, however limited, is always found in the pregnant tube, and that without a decidua, the ovum would find no abiding place in the tubal canal, even in the presence of the above-named predisposing causes. In the event, therefore, of the decidua forming in the tube, the predisposing cause will serve to obstruct the passage of the ovum,

thereby rendering possible the implantation of the ovum in the tube rather than in the uterus. Webster's view is supported by other observers, but it has perhaps a theoretical rather than a practical basis.

Diagnosis.—Ectopic pregnancy is, indeed, a very common condition, and from the gravity of the lesion it is of the utmost importance that an early diagnosis should be made. The clinical diagnosis of this malady is made first by establishing the fact of pregnancy, and second, by locating the gestation sac. The subjective phenomena are valuable in establishing the existence of pregnancy, but the location of the gestation sac can be ascertained only by a careful pelvic examination. In consideration of the diagnosis of ectopic pregnancy, I will limit myself to the determination of ectopic pregnancy prior to rupture, and second, the determination of rupture with intraperitoneal or extraperitoneal hemorrhage. It is true that the diagnosis of the early unruptured extrauterine pregnancy is somewhat difficult, and this is due to the fact that the symptoms are so mild or the patient is persuaded that she is running a normal pregnancy, and therefore the physician does not have the opportunity to examine these patients until after rupture has occurred. Philander A. Harris says, however, that 29 out of every 30 cases of ectopic pregnancy present symptoms by which a presumptive, if not a positive diagnosis, can be made prior to the patient's arrival at a condition that is alarming. In a study of 130 cases, he found that 90 per cent. had consulted physicians for pelvic symptoms before the tragic state was reached, and all were told that an ordinary abortion threatened. Twenty per cent. of this number were curetted, and in only 20 per cent. of the cases were diagnoses established before the tragic stage. Many of these patients were wrongly assured by the attending physicians, and although the patients continued to manifest symptoms of the non-tragic stage, they relied for days or weeks on false hopes until the tragic symptoms occurred.

The diagnosis of ectopic gestation prior to rupture is often accidental, and frequently, when the diagnosis has been made, the operator finds the mass in question to be either an inflamed tube or a small cystic ovary. It has been stated that Veit in Germany in 1883 and Janvrin in this country in 1888 were the first to confirm by operation the diagnosis of unruptured tubal pregnancy. The subjective phenomena of extrauterine pregnancy may not differ materially from those of uterine pregnancy of similar age. In the early weeks, the

patient is seldom aware of any unusual complication. The cessation of menstruation occurs in about one-half of the cases. Lemann, Vineberg, Kaarsberg, and most investigators regard any irregularity of the menstrual function during the child-bearing period of life as of serious significance. Morning sickness occurs at about the same time and runs the same course as in uterine pregnancy, while the nervous phenomena, such as ringing in the ears and despondency, are rarely exaggerated beyond that of normal uterine gestation. Rather striking subjective symptoms are the periodic colicky pains which are unlike anything that should occur in normal uterine pregnancy. It is this incident that usually first attracts the patient's attention. The pains are intermittent in character and are located in the region of the uterus and affected tube. The objective signs of extrauterine pregnancy differ essentially from those of uterine gestation. The mammary glands do not show the same changes, the areola is poorly marked and secretion is scanty or absent. Discoloration of the vulva and vagina and softening of the vaginal portion of the cervix and compressibility of the lower uterine segment may all be present, but not to the degree found in uterine pregnancy. McDonald considers Jacquemien's sign, the peculiar violet hue of the vagina just below the urethral orifice as an extremely important sign from the fifth to the eighth week. He also considers the cervical blush and cervical softening of much value. Ladinski lays stress on finding a spot of peculiar softness and elasticity on bimanual examination in the anterior uterine wall just above the junction of body and cervix. Absence of this sign, he says, excludes positively intrauterine gestation, but aids in making a positive diagnosis of ectopic pregnancy by excluding uterine pregnancy. It is due, he says, to the increased vascularity at this point. The rate of growth, form, position and consistence of the uterus vary considerably from that of normal uterine gestation. Cases are reported in which the uterus did not develop, but these are exceedingly rare and it is said that the nearer the gestation sac is to the uterus, the larger the uterus becomes. The general contour of the uterus differs somewhat from that of the normal pregnant uterus. Moreover, as a rule, the uterus is seldom found in the median line. It is crowded to one side by the gravid tube. If, with the above symptoms and signs, a mass is found upon one side which is slightly movable, more globular than is characteristic of a tubal tumor and not involving the tube to such a degree as to form a part of the

broad ligament, and should distinct pulsation be revealed in the mass, a diagnosis of ectopic gestation is justifiable.

It is extremely important, and this point I wish to strongly emphasize, that in making a vaginal examination where any suspicion of extrauterine pregnancy exists, the utmost care should be observed in the procedure, because indelicate manipulation may result in the rupture of the gestation sac with severe hemorrhage followed by the death of the patient before any means of intervention can be instituted. Montgomery has had this experience on two occasions and J. M. Fisher has reported a like experience. Wallace reports a case of tubal gestation rupturing during bimanual examination. He operated upon the patient immediately and she recovered.

The diagnosis of unruptured tubal pregnancy can, as a rule, be made by bimanual examination even in the early stages of gestation. Searle reports a case in which the symptoms were diagnosed and operation performed fourteen days after conception.

The Diagnosis of Ruptured Ectopic Pregnancy.—The diagnosis of ruptured ectopic pregnancy or a tubal abortion should not be difficult. With the preceding history, associated with the history of the patient being seized with a sudden attack of violent tearing pain, followed by syncope, symptoms of internal hemorrhage and collapse, the probability of a ruptured extrauterine gestation should be the first condition considered. Of course, the foregoing symptoms and signs are typical of cases of ruptured gestation sacs. Typical symptoms and signs of the condition occur in the great majority of cases, and this condition more than any other pelvic disease is frequently diagnosed provisionally by the subjective phenomena. Atypical cases are common, but with the patient presenting a history of irregular menstrual bleeding, abnormal pelvic sensations, repeated attacks of syncope of varying degree, the gravest acute pelvic lesion, that is, ruptured ectopic pregnancy or tubal abortion, should be the first condition considered.

At the time of rupture, however, an internal examination affords but little information unless the tumor is sufficiently large to cause a sensation of resistance upon one side. When the bleeding is very extensive and the abdominal wall is not very resistant, it is said that evidence of distention will be noticed and even fluctuation may be recognized in the flanks. In my experience these signs have been extremely uncommon. If the hemorrhage is not so profound as to result in immediate death, the

fluid portion of the blood is gradually absorbed; the remainder becomes coagulated and forms a resistant, boggy mass in the pelvis which, in the absence of a previous history of inflammatory trouble or previous existence of a growth, can be looked upon as clotted blood. The accumulation usually takes place in the pouch of Douglas, and the extravasation may be so large as to completely fill the pelvis and lower abdomen. The systemic phenomena are always more marked when the hemorrhage is free in the peritoneal cavity. When the rupture takes place with bleeding between the folds of the broad ligament, the symptoms are not so pronounced. In extraperitoneal rupture, the sac will be found on one side of the uterus and the uterus pushed in the opposite direction. Rupture of the gestation sac is generally followed by the discharge of a decidual membrane and blood from the uterus. The decidua discharged at this time is 6 to 8 mm. in thickness and marked by decidual cells, while the decidua discharged in certain cases of membranous dysmenorrhea rarely exceeds 2 or 3 mm., and is usually passed in pieces.

Women who present a picture such as the above usually believe they have passed through a premature labor. In making a pelvic examination during or even two or three days after rupture, a distinct mass is not always demonstrable. This is due to the fact that the extravasated blood remains fluid. A physical sign, however, and one of decided importance is the increase in the antero-posterior measurement of the utero-rectal space. The uterus is pushed forward by the fluid blood and the rectum is forced backward. The accumulation in the pouch of Douglas also destroys the depth of the posterior vaginal fornix and this may even be entirely obliterated. In some cases, where a distinct mass is not found, a peculiar bogginess is detected in the utero-rectal pouch. Of course one would conclude that the temperature during rupture would naturally descend and this is true; but after forty-eight or seventy-two hours, there is generally a decided rise, despite the signs of profound anemia and enfeebled heart action. The elevation may reach from 100° to 102°. This disturbance in the temperature is due to the absorption of pyrogenic material from the blood and also from the irritation of the peritoneum by the extravasated blood. In tubal abortion the symptoms are not so marked. The loss of blood, however, may be very great and I have seen cases in which the abdominal cavity has been fairly flooded. The blood loss in tubal abortion is gradual, however, and extends over a period of several days

or even weeks. The patient usually complains of having slight periodic pains in one side of the abdomen with a sensation of weakness and fainting.

One must be mindful of the fact that extrauterine gestation may occur twice in the same patient. Florus reported a case occurring twice in the same individual within a period of fourteen months, first in the left tube, then in the right.

The points which should lead one to make a diagnosis of ruptured extrauterine pregnancy, after eliciting the history of a possible pregnancy, are: At the moment of attack, the patient was in her normal health. This feature would render it highly improbable that the symptoms were due to gastric or intestinal perforation or to rupture of an internal abscess; the gradually increasing pallor of the patient and the increased rapidity of the pulse without corresponding rise of temperature are both indicative of internal hemorrhage; extreme tenderness of the abdominal wall is also of special value. These symptoms should be carefully analyzed and not be allowed to lead the diagnostician to believe that he is dealing with a case of peritonitis. We must always remember that a history of regular menstruation does not preclude the possibility of ectopic pregnancy, for occasionally we see patients with a normal menstrual history. The diagnosis of ruptured ectopic pregnancy can always be confirmed by making a posterior vaginal incision, and in doubtful cases, posterior colpotomy should be always resorted to. Indeed, in my judgment it is advisable to employ it in all cases where haste is not demanded.

Differential Diagnosis.—The conditions with which ectopic pregnancy may be confounded are a retroverted gravid uterus, pelvic exudate, particularly when following an abortion, pregnancy in a bicornate uterus, pregnancy in a rudimentary uterine horn, ovarian tumors, movable kidney, fibromyomata of the uterus, malignant disease, acute abdominal affections such as appendicitis, intestinal colic, hepatic colic, internal hernia, acute pancreatitis, or rupture of a gastric or intestinal ulcer.

Retroverted Uterus.—A retroverted gravid uterus is sometimes difficult to differentiate from extrauterine pregnancy, but by bimanual examination under an anesthetic, the uterine body can be outlined. The ectopic gestation sac would be found in the lateral portion of the retrouterine pouch and the uterus will be found anterior and apart from the gestation sac. In uterine pregnancy, furthermore, the lower uterine segment is well developed, the cervix is softer, the uterine body is larger and more globular and the transverse diameter is relatively

increased. The possibility of a combined uterine and extrauterine gestation is to be borne in mind, and numerous instances of this condition have been reported. A sign of decided value in distinguishing the ectopic gestation sac is that the mass is more or less pulsatile.

Pelvic Exudate.—Pelvic exudate following abortion is distinguished from ectopic gestation by the fact that in the latter there is less tenderness and pain and the general symptoms of toxemia are not present unless the gestation mass becomes infected. In pelvic exudate following abortion there is, as a rule, infection, therefore, there are marked inflammatory signs, and, moreover, with the development of the inflammatory action, general symptoms of infection increase, while with the appearance of an escaped mass following the rupture of the gravid tube, symptoms of marked prostration appear. In doubtful cases, an exploratory vaginal incision will determine the nature of the accumulation.

Pregnancy in a Bicornate Uterus.—Pregnancy in a bicornate uterus may closely resemble ectopic gestation. The diagnosis may be cleared by the discovery of a septum in the vagina or cervix. It is rarely possible to palpate the round ligament, but if found, it will be attached to the uterus external to the gestation sac, and the pregnancy therefore is interstitial or in the uterine horn. If the round ligament, on the other hand, lies internal to the gestation sac, tubal pregnancy is positively present.

Pregnancy in a Rudimentary Horn.—Pregnancy in a rudimentary uterine horn cannot be differentiated from a tubal pregnancy without an abdominal operation, and it is then recognized by finding the insertion of the round ligament external to the gestation sac.

Ovarian Tumors.—Ovarian tumors may be difficult to distinguish from an ectopic pregnancy. In ovarian tumors, the breasts may be enlarged and contain secretion, and there may be morning sickness and amenorrhea, but a bimanual examination under anesthesia should determine the diagnosis. Rupture of an ovarian cyst may suggest a possible rupture of an ectopic pregnancy, but in the absence of the history of pregnancy, the history of a long standing tumor and the absence of changes in the uterus suggestive of pregnancy, including the discharge of the decidua, should suffice for the making of a diagnosis.

Torsion of the pedicle of an ovarian cyst may give rise to pain and symptoms of internal hemorrhage not unlike those of a ruptured tubal pregnancy, but a consideration of the points referred

to in the above paragraph, should serve in excluding the rupture of a gravid tube.

Fibromata of the Uterus.—Fibroid tumors of the uterus can scarcely be mistaken for extrauterine gestation. In fibroids there is an absence of a history of pregnancy, the uterus does not show the changes characteristic of pregnancy, the tumor is of long standing, it is firm in consistence, and the uterus bears a close relation to the tumor itself. Besides, menorrhagia and not amenorrhea are frequently present.

Malignant Disease.—Malignant disease of the pelvis by its irregular outline may suggest ectopic pregnancy, particularly when occurring during the child-bearing period of life, but the absence of the signs of pregnancy and the presence of general signs of malignancy would exclude the possibility of a pregnant tube.

Acute Appendicitis.—Acute appendicitis may closely simulate a ruptured tubal pregnancy; but in appendicitis, none of the general and local signs of pregnancy are present and the pelvic examination is usually negative. In appendicitis there is often a history of similar attacks extending over a period of years, with intervals of complete or partial freedom from pain and abdominal symptoms. The disturbance is almost always confined to the right side, while in ectopic pregnancy it may occur in the median line or upon the left side. In both conditions the pain appears suddenly and may be very intense. In ectopic pregnancy it may be momentary, while in appendicitis it persists throughout the attack and gradually increases. The pain of a ruptured tubal pregnancy is of short duration and tends to subside. It is said that the pain of appendicitis appears more often in the early morning hours, while the pregnant tube may rupture at any time. The sudden pallor and collapse following immediately upon the ruptured tubal gestation are not common in appendicitis. With the onset of the pain of the ruptured sac, a most suggestive sign appears, namely, uterine hemorrhage accompanied by the discharge of decidual membrane. In such an event there can be no further consideration of appendicitis. Pelvic examination reveals the signs of pregnancy, the uterus displaced to one side, with the mass either attached to it, or occupying Douglas' pouch. The diagnosis can be made certain by a posterior vaginal incision.

Intestinal Colic.—Intestinal colic begins with griping pain in the abdomen followed by vomiting and diarrhea. The cause of this disturbance can usually be demonstrated.

Renal Colic.—This should not be difficult to differentiate from rupture of a pregnant tube, but when occurring during the course of an early uterine pregnancy, renal colic may excite the suspicion of a ruptured gravid tube. In renal colic, however, the pain is severe and radiates to the groin and thigh. Vomiting, sudden rise of temperature, cold sweats and collapse are frequent accompaniments. Watching the urine closely, blood will be seen to appear and even particles of a stone may be found in the urine. These phenomena in the absence of an extrauterine pelvic mass, will serve to establish the diagnosis, and besides, the history of previous attacks will be highly suggestive.

Hepatic Colic.—Hepatic colic associated with an early uterine pregnancy would give rise to the suspicion of a ruptured ectopic gestation, but there is usually a history of repeated attacks of this condition extending over a period of years followed by more or less jaundice. Pain in hepatic colic is referred to the right hypochondrium, epigastrium, right shoulder, arm and back. It is always associated with epigastric tenderness, nausea and vomiting. If the stone obstructs the common duct or hepatic duct, there will be jaundice, clay-colored stools and bile in the urine.

Internal Hernia.—This condition begins with pain generally, but pain may be only slight and is often absent. Vomiting is the earliest sign, and the vomited material soon becomes stercoraceous. There is absolute constipation, the abdomen becomes distended and tender and the urine will show the presence of indican in large quantities. None of these symptoms points to the pelvis and vaginal examination excludes the possibility of ectopic pregnancy.

Acute Pancreatitis.—In acute inflammation of the pancreas, abdominal symptoms are very severe. There is very little possibility of mistaking such a condition for an extrauterine gestation and pelvic examination will usually establish the diagnosis.

Movable Kidney.—Mobility of the kidney is seldom associated with intense abdominal pain or shock. Pain in movable kidney is usually in the right side, and on palpation the kidney-shaped tumor is found in the right lumbar or iliac region. The ability to readily reduce this tumor beneath the right costal arch will fix the diagnosis. Pelvic examination would be negative.

Rupture of a Gastric or Intestinal Ulcer.—In these conditions there is a previous history of gastric and intestinal disturbance extending over a period of years. In nearly all cases, marked vomiting occurs. The clinical history and pelvic exam-

ination will exclude the possibility of extrauterine pregnancy.

Treatment.—In the consideration of the treatment of ectopic pregnancy, I will limit my discussion to, first, the care of the sac before rupture; second, treatment of the condition during rupture with hemorrhage into the peritoneal cavity or hemorrhage between the folds of the broad ligament. Time will not permit me to discuss the treatment of the various forms of secondary abdominal pregnancy.

An unruptured ectopic gestation sac is an extremely dangerous lesion and the only treatment for the condition is surgical intervention. It has been said that an unruptured ectopic gestation sac should be regarded as a malignant tumor and treated in the same manner as one treats malignant disease. Ectopic pregnancy, if undisturbed, is one of the most fatal conditions that the gynecologist is called upon to treat, and its early removal by abdominal section is the only method of treatment worthy of consideration. Other methods have been suggested by different writers, such as the injection of various toxic substances into the fetal sac, with the hope of destroying the live embryo and thus preventing further development. This recourse is not without danger; it is liable to excite rupture, and, moreover, the intratubal death of the fetus does not prevent the gestation sac from enlarging, because repeated hemorrhage takes place within its cavity, and this will continue to subsequent over-distention and rupture. The condition, therefore, is just as serious after the death of the fetus as it was before the injection treatment was instituted.

Before instituting surgical intervention, however, the patient and her near relatives should be informed as to the gravity of the condition, and during preparation for operation, the patient should be kept quiet and at rest. The removal of the sac is accomplished through the abdominal incision, and the mass should be removed by clamping and excision with subsequent suture of the mesosalpinx. The ovary of the affected side, if in a healthy condition, should always be allowed to remain.

Treatment During Rupture.—The treatment of an ectopic pregnancy during rupture of the gestation sac consists in the immediate opening of the abdomen, clamping the broad ligament of the affected side and removal of the gestation mass. During the preparation of the patient for operation, she should be calmed by encouraging words, and if restless and tossing about, she should be rendered quiet by the hypodermatic injection of small doses of morphine. Stimulation during this period should

be absolutely avoided because in many cases the primary rent in the tube is small and nature immediately takes steps to save the patient by plugging the opening with coagulated blood; therefore, if the arterial tension is increased by injection of salt solution and the heart's action accelerated by the administration of cardiac stimulants, the clot is forced from the opening and hemorrhage takes place with renewed vigor.

Before the administration of the anesthetic, the physician should see that every preparation of the patient and operating room is complete in order to administer as little anesthetic as possible, lessen the duration of narcosis and thus expedite the operation. It is my plan to always thoroughly cleanse the vagina and incise the posterior vaginal wall. The diagnosis is thus confirmed in all cases, and, besides, this channel can be utilized if necessary, in subsequent drainage of the abdominal cavity. The patient is then placed in the Trendelenburg position, the operative field is resterilized, the abdomen is opened immediately and search for the fundus of the uterus is made. After this organ is found, the hand should pass out upon one side of the uterus, exploring the appendages and the broad ligaments. If the examination upon the explored side is negative, one should immediately pass to the opposite side and on discovering the mass, it should be delivered into the abdominal wound, at the same time compressing the leaflets of the broad ligament between the thumb and index finger. The broad ligament should then be clamped with an ordinary pair of curved hemostatic forceps, one forceps securing the outer border of the broad ligament and another instrument securing that portion of the ligament with the tube next the uterus. The mass is now excised and the broad ligament sutured with an interlocking suture of chromicized catgut. If, during the operation, the intestines obstruct the field, these are packed away. After securing and suturing the broad ligament in the manner described, one should endeavor to cleanse the abdominal cavity of the accumulated blood. In my recent cases, I always establish posterior vaginal drainage for the reason that quite frequently the blood is not all removed from the abdomino-pelvic cavity, and this may undergo infection and necessitate a subsequent operation and jeopardize the life of the patient.

As soon as all preparation is completed and the patient is placed on the operating table, stimulants should be at once administered. Strychnine and cardiac stimulants should be given hypodermatically, and as soon as bleeding is controlled intravenous injection of salt solution should be instituted. This

should be at a temperature of 105° or 110°, and the patient should receive not less than one, one and a half, or two liters.

The after-treatment consists, if the patient's condition indicates, in the administration of stimulants such as strychnine, ergot, digitalin, salt solution, and whiskey by rectal enemata. If necessary hypodermatoclysis should be employed, and in grave cases intravenous transfusion should be repeated.

Treatment with Rupture Between the Folds of the Broad ligaments.—The treatment of a ruptured ectopic gestation sac with hemorrhage into the folds of the broad ligaments is the same as the method described for intervention in intraperitoneal rupture.

Some controversy has arisen concerning the operative period in ruptured tubal gestation; but the experience of most observers has persuaded them that immediate surgical intervention offers the greatest hope for the patient. Heineck argues that nature's tedious methods of relief and the many dangers to which the woman is obviously exposed during rupture, justify surgical interference. Simpson, on the other hand, does not recommend immediate operation in cases of rupture with severe bleeding and profound depression, but he does advise immediate operation during rupture with slight hemorrhage and moderate prostration. Hunter Robb does not believe that the amount of blood lost in tubal rupture or tubal abortion is sufficient to cause a fatal issue, because, he says, the larger vessels, uterine or ovarian, are not implicated. He waits for from three to twelve days, if the patient improves, before operating. Robb has shown by a series of experiments upon dogs that hemorrhage from large vessels ceased before it was sufficient to prove fatal. According to Huggins, Robb's investigations cannot be applied to the human individual, because he has demonstrated by experimenting on fifty dogs that the period of blood coagulation in this animal is about one-half the time required for the blood of the human being to coagulate.

A. Martin reports 265 cases of ruptured tubal pregnancy with a recovery of 36.9 per cent. under the expectant plan of treatment, but the same investigator reports 515 cases of tubal rupture with 76.7 per cent. of recoveries by operative measures. (Quoted by Heineck.) Ladinski has operated repeatedly in ruptured ectopic pregnancy when the radial pulse was scarcely perceptible, with favorable results. Ground reports 28 cases of ectopic pregnancy and 21 of these were operated upon during rupture and 7 before rupture; all recovered. Operative cases, according to Choyan, show recoveries of 84.4 per cent. of cases.

Concerning the avenue of attack, most operators agree that the abdominal route offers the most advantages, but there are others who prefer the vaginal incision. Orthmann selects the vaginal channel because he believes it is associated with less shock and permits of access to the bleeding points as quickly as or more quickly than through the abdominal incision. Moreover, he claims that drawing down the uterus seems to aid in controlling the hemorrhage. In support of his view, he quotes 1,176 abdominal operations in eight different clinics, with a mortality of 8 per cent.; while in 135 vaginal operations, the mortality was only 5 per cent. In his own experience, the mortality in 57 vaginal operations was only 1.7 per cent., while he lost 12.8 per cent. of the 39 patients whom he operated upon by abdominal section.

In conclusion, I wish to emphasize five important points, as follows:

1. That on careful questioning, in nearly all instances a history of some menstrual disturbance will be elicited, despite the fact that many authors claim that amenorrhea occurs in only 50 per cent. of the cases.
2. That in all cases of irregular menstruation or bleeding from the genital tract, a bimanual examination is imperative.
3. That no physician is justified in concluding that a patient presenting a history of irregular menstruation is having a premature birth.
4. That in all cases of ruptured ectopic gestation, a positive diagnosis can be made by incising the posterior vaginal wall and this opening can be utilized in establishing abdominal drainage.
5. That all cases of ectopic pregnancy, whether before, during or subsequent rupture, are best treated through an early abdominal incision.

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POLYPOID GROWTHS AND RECTAL POLYPI WITH A REPORT OF A RECENT CASE OF FIBROMA, UNDERGOING MYXOMATOUS DEGENERATION.

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Much confusion has arisen from the misuse of the terms "polypoid" and "polypus" owing to the fact that they have been employed as referring to growths in and about the bowel, *whether pedunculated or not*. In the present article the names are used to designate only pedunculated, non-specific, and non-malignant growths attached to the mucous membrane of the rectum, to which only the term polypi is strictly applicable; and to those smaller growths, not always absolutely pedunculated, formed within the bowel, frequently situated on a hemorrhoid, which are designated as polypoid growths.

It is true that in former times many of these tumors escaped detection by reason of the failure to properly investigate cases presenting symptoms of rectal trouble, yet the disease is by no means a common one, as compared with other ailments of this locality even in the practice of eminent proctologists. The Messrs. Allingham¹ state that their statistics at St. Mark's Hospital show that, in four thousand cases of rectal diseases, there were only sixteen instances of polypus without fissure.

Pedunculated growths are not confined to the rectum but are found all through the intestinal tract:—colon, cecum, at the ileo-cecal valve, in the upper and lower portion of the small intestine, in the duodenum, and most rarely in the middle portion of the ileum. According to Dr. O. Leichtenstern, of Tübingen², who made an extended examination of the literature on the subject of the sites at which

intestinal polypus are found, the following table indicates the relative situation of these growths in a study of one hundred and twenty-eight cases investigated; Rectum, 75; different places in the colon, 10; cecum, 4; ileo-cecal valve, 2; lowest part of the ileum, 30; jejunum, 5; and duodenum, 2. James P. Tuttle³ calls attention to a point worthy of mention in connection with the apparent frequency of the occurrence of polypi in the rectum and sigmoid, compared with other portions of the intestinal tract, by stating that this preponderance may be more apparent than real, inasmuch as the lower bowel is the only one that can be readily explored during life, and therefore the tumors are seen there when it would be impossible to observe them when located above the sigmoid.

A polypus is hard or soft in proportion to the relative amount of fibrous substance, or glandular mucous tissue entering into its formation.

VARIETIES.—Polypi are classified into eight varieties: (a) Adenoma; (b) Lipoma; (c) Fibroma; (d) Papilloma; (e) Cystoma; (f) Myoma; (g) Enchondroma; and (h) Myxoma.

A better and further subdivision of these varieties is mentioned by Tuttle⁴ in which the tumors are classified from a histological standpoint, as follows:

THE CONNECTIVE TISSUE TYPE.—Fibroma, Enchondroma, Lipoma, and Myxoma.

THE MUSCULAR TYPE.—Myoma.

THE EPITHELIAL TYPE.—Adenoma and Papilloma.

ADENOMATA, OR SOFT POLYPI.—These are probably the most frequent form of benign neoplasm met with in the rectum. They occur with the same relative frequency in both of the sexes and especially between the ages of three and twelve. In children the frequent occurrence in the same cases of polypi in both the rectal and naso-pharyngeal regions has led some authorities to attribute a common cause, which results in the formation of the growths in the lymphoid structure of the naso-pharynx and rectum.⁵ They vary in size from that of a small pea to that of a walnut, although cases are on record in which the tumor has been considerably larger. Esmarch⁶ alludes to a very remarkable tumor of this kind that completely filled the rectum and weighed four pounds, which, however, I am inclined to think must have been a fibroma. Their shape is more or less globular or pyriform. The surface is usually lobulated and nutmeg-like. Their seat is ordinarily about two or three inches above the anal margin but they may occur much higher. Cases have been reported with pedicles six inches in length and attached to the sigmoid;

but, generally speaking, the pedicle of these growths is short and thick and not long and slender as in the case of fibroma. Many of these tumors would undoubtedly grow much larger but for their tendency to spontaneous extrusion, due no doubt to the muscular efforts made during evacuation of the bowels. In children, especially, I have reason to believe that this fortunate termination takes place without the existence of a polypus being suspected. Many such cases, I am sure, have been erroneously diagnosed as prolapsus, because no examination was attempted by the medical attendant and the mother's statement was too readily accepted that the child's bowels protruded at each stool.

Arterial pulsation can frequently be felt within the pedicle of polypi, as it is through this stem that the blood-supply of the growth is furnished. In rare instances, two pedicles may exist attached to but a single polypus. The vessels supplying these tumors are often of fair size, and the fact is of importance, and should be borne in mind when excessive bleeding occurs in spontaneous detachment of these neoplasms.

In exceptional cases, two or three adenomata may exist in the same patient; and in still rarer instances, the entire rectum and colon may be covered with them. I have personal knowledge of only one such case in a man over sixty, who for years knew of his trouble and had consulted several rectal specialists and undergone all manner of treatment, short of excision of the bowel, with no permanent benefit. In fact, cauterization and removal of the portions of the neoplasm seemed only to encourage a speedy reformation of the growths. Mr. Harrison Cripps⁷ mentions two such cases—which he describes as "Disseminated Polypi"—as having come under his personal observation, in which a brother and sister suffered from this condition. He further states that a careful search through the pathological museums of London, only resulted in finding three similar specimens. Cooper and Edwards⁸ state that rectal adenomata closely imitate the normal mucous membrane in structure, though their glands are larger, more abundant, more branched and convoluted, and less regularly disposed. They also assert that the tissue resembles that of adeno-carcinoma but that it has no tendency to invade neighboring structures or glands and that it does not break down and ulcerate.

LIPOMA.—Tumors composed of adipose tissue have been observed in the rectum as well as in the upper intestinal tract. They ordinarily develop from the submucous coat of the bowel though they may arise from the subperitoneal fat. Ordinarily

these growths are imbedded in or closely attached to the rectal wall. They rarely become pedunculated but sometimes assume a polypoid shape and have a pedicle of two or three inches in length. It has been suggested that they may be inverted appendices epiploicæ which have descended from the sigmoid or upper part of the rectum, but there is little evidence to sustain this theory. Sir Charles Ball⁹ cites the following fact in favor of this opinion,—that in some of the recorded cases, the pedicles of rectal lipomata have been noticed to contain a tolerably large funnel-shaped process of peritoneum; against this theory, however, the same authority mentions the fact that similar tumors are sometimes found in the small intestine.

These tumors often attain a considerable size, weighing several pounds, and, under such circumstances, they encroach considerably upon the lumen of the bowel.

FIBROMA.—These tumors take their origin from the submucous tissue of the bowel, are more or less pedunculated and vary somewhat in regard to density; as a rule, they are nodular and firm. In rare instances they may be cavernous¹⁰ and, in equally rare cases, cystic,¹¹ the glandular portion of the tumor being filled either with fluid resembling glue (colloid) or with a jelly-like substance (myxoma). The small growths so frequently associated with irritable ulcer of the anus (fissure) and situated at its upper extremity are true fibromata; as also are the small polypi (polypoid growths, or saw-teeth papillæ) so frequently seen attached to the surface of internal piles and which according to Messrs. Cooper and Edwards¹² are due to a hypertrophy of the upper extremities of the columns of Morgagni.

These growths consist of an overgrowth of the loose connective tissue of the submucosa, covered by mucous membrane. Sometimes they become quite an extensive growth. In this connection, Sir Charles B. Ball¹³ quotes two interesting cases, which are worthy of notice here: the first one, being a woman whose history is recorded by Mr. A. A. Bowley,¹⁴ who while having a stool, felt something pass which was found to be attached to the bowel and which she was unable to return. An examination revealed a tumor, the size of a fetal head, attached about four inches up by a pedicle, one and one-half inches in diameter, to the interior wall of the rectum. The base was transfixed and ligated and the mass removed. It weighed two pounds all but one ounce. Upon section, it was found to be composed of loose connective tissue, the meshes of which contained a viscid fluid. The second case

was one reported by Dr. Barnes¹⁵, in which a growth was found in the rectum the size of an orange. It was removed by the galvanic cautery and found to be composed of loose fibro-cellular tissue; covered by a tough and altered mucous membrane; the deep parts being cavernous in structure.

Polympi of this variety are usually single, but occasionally multiple and, in a very few instances are disseminated over the bowel. Spontaneous detachment of these growths may occur, and, a recurrence has been noted in a few instances, either at the site of removal or at a point nearby.

PAPILLOMA.—These growths are variously termed by different authorities as "villous tumors of the rectum," "villous polypus," and "granular papilloma." According to Ball¹⁶ they are a rare form of rectal growth, resembling the villous tumor of the bladder in general appearance, with the slight difference, however, that the lobes in the bladder growth are more filiform, while in the rectum they are flattened or club-shaped. They are composed of the papillae of the mucous membrane, which have proliferated freely and are covered with cylindrical epithelium. Papilloma are attached to the wall of the bowel by a more or less broad pedicle, though occasionally they are sessile. They bleed freely and are the cause of more or less mucoid discharge. The Messrs. Allingham¹⁷ state that they had seen eighteen cases of this interesting but rare disease, and, from a study of the literature, made at the time, succeeded in finding a record of but eight other cases. These growths are only found in adults or in aged persons.

CYSTOMA.—This general term, so far as concerns the rectum, embraces all those tumors which have undergone cystic degeneration, and, ordinarily, should include a consideration of dermoid and hydatid growths, but as these growths rarely assume the shape of a polypus and are never pedunculated, in the case of dermoids; and only occasionally so in hydatids, they are not considered in the present article. The cystic degeneration which may occur to an adenoma, fibroma, etc., has been mentioned under the respective headings; in all such cases the cyst is of secondary importance, the exact nature of the character of the neoplasm being shown in the non-cystic portion of the growth.

Single cysts are of rare occurrence in the rectum. Dr. James P. Tuttle¹⁸ mentions a very interesting case, reported by Dr. Prideaux;¹⁹ A woman who had suffered from a difficult parturition, complained of intense pain in the pelvic region; her abdomen became distended and tympanitic and she exhibited all the signs of intestinal obstruction and was unable

to pass flatus on account of something which she described as blocking the lumen of the bowel. On examination, the rectum was found to contain a tumor as large as a fetal head. It was pulled out of the anus, and was found to be a cyst with a narrow pedicle, about six inches in length, which was tied in two places and divided between them. The tumor was opened and found to contain a half-pint of thick albuminous fluid; its sac was from $\frac{1}{8}$ to $\frac{1}{4}$ inch in thickness. The patient made a good recovery. She had been constipated for years, but otherwise, there was nothing in her condition to excite suspicion of the presence of a tumor. Cooper and Edwards²⁰ quote another case, operated by Drs. Adams and Hobson,²¹ in which a thin pedunculated,

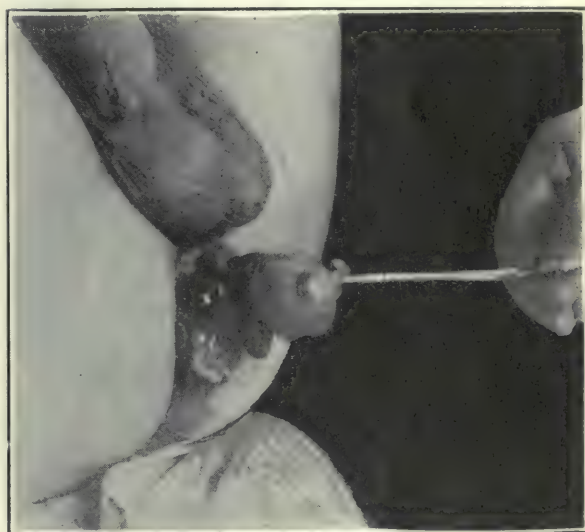


Fig. 1.

pyriform, semi-transparent cyst was found hanging from the rectum of a woman, after her fourth confinement. It was flaccid and only about half filled with fluid; its point of attachment could not be reached and the growth itself could not be replaced within the rectum. It was tapped and eight ounces of an albuminous fluid were removed, after which reduction of the tumor was readily accomplished. Five years later and at her fifth confinement, the woman died from a peritonitis, due apparently to an ovarian tumor.

Two other cases of cystoma are described by Mr. Harrison Cripps,²² to only one of which I shall refer; the reference is made particularly because of the patient's age: a boy, aged nine, from whom a cystic polypus the size of a walnut was removed. The pedicle was several inches in length. Owing to a movement of the patient, who was not under an anesthetic, the head of the polypus was suddenly dragged off before a ligature could be applied and

the unligatured pedicle slipped back into the bowel. The hemorrhage, however, was slight, and, consequently, convalescence was uneventful.

MYOMA.—In a very few instances tumors composed of muscular tissue have been removed from the rectum, but usually these growths are a combination of fibrous and muscular tissue (myo-fibroma). They are composed of unstriated muscle and are not very vascular. They are usually nodular and supplied with a pedicle, or they may be found in the muscular wall of the bowel, covered with the mucous and submucous coats. It is impossible to distinguish the exact nature of these neoplasms without a careful microscopical examination.

ENCHONDROMA.—The cartilaginous growths are said to occur in the rectum but they must be extremely rare. Dr. W. H. Van Buren²³ relates the case of a man in whom he detected a globular elastic tumor, fixed to the brim of the pelvis, which he diagnosed as an enchondroma, and proposed a colostomy, to which the patient readily consented so great was his suffering. During the delay, incident to the preparation for the operation his symptoms were ameliorated to such an extent, by keeping the passages liquid, that surgical intervention was not necessary. It was ascertained at a later period that the tumor had changed its direction of growth. It must be borne in mind, that the diagnosis in this case was not confirmed by microscopical examination.

MYXOMA.—This, the rarest of all forms of rectal neoplasms, consists of mucous tissue. It may assume the polypoid shape, or occur as a semi-spherical protuberance; occasionally it is lobulated, but ordinarily its surface is smooth. Tuttle²⁴ states that the soft rectal polypi of children are practically myxomata. An instance of a tumor of this description in which the diagnosis was confirmed by microscopic examination, is given by Dr. Jones, of Pennsylvania,²⁵ and quoted from Cooper and Edwards' work²⁶ of a woman, aged sixty-three, who had suffered for two years from symptoms of chronic dysentery. Examination by the vaginal route revealed a tumor high in the rectum. Under ether anesthesia, the sphincters were divulsed, the hand was introduced into the bowel and the growth drawn down. A ligature was placed around the pedicle, which was very broad and thick, and it was severed. The tumor was found to consist of three separate growths, the largest the size of a pullet's egg.

SYMPTOMATOLOGY.—Polypi occasion but little or no pain, unless ulcerated or strangulated. Uneasiness about the rectum and a sense of fullness

are frequently complained of. Not infrequently a sensation of a foreign body in the rectum is experienced. Often, after defecation, there remains a disagreeable sensation as if the evacuation had been but partially accomplished. There are no symptoms which are in any way characteristic of these growths, though a variety may be met with in a given case. Constipation or frequent stools; discharges of mucus, at times abundant and sometimes mixed with pus and blood; shooting pains or distress in the loins, back, or limbs; and more or less tenesmus, are often noted. The character and intensity of the symptoms are influenced by the size and position of the neoplasm. If situated high in the rectum, but little, if any, inconvenience may be experienced. When, however, it is attached low in the bowel, the local disturbance may be marked. If the growth be of large size, it may partially or completely obstruct the bowel. Various reflex symptoms are encountered when the polypus is long enough to be extruded at stool, or to be caught within the grasp of the sphincter muscles. Intussusception and even prolapse of the bowel may be occasioned by these growths.

DIAGNOSIS.—The differential diagnosis of the varieties of rectal polypi has already been sufficiently outlined. The determination of the existence of polypi is not difficult; they either protrude from the anus and can be seen, or by examination with the fingers may be felt and recognized; or their location and size can be determined by an investigation conducted through a sigmoidoscope. In a digital examination, the entire rectum may be examined by passing the finger as high as possible into the bowel, then sweeping the palmar surface around the mucous membrane from above downwards. In this manner the polypus may be caught between the finger and the rectal wall; otherwise, the growth would escape detection by being pushed ahead of the examiner's finger. Frequently, these growths may be brought into view by pressing them firmly against the rectal wall and slowly dragging them downward. Care must be exercised that too much force is not employed for fear of breaking the polypus—especially the softer varieties—from their pedicles, as free hemorrhage may ensue and occasion considerable difficulty in locating and controlling the bleeding area. Generally, a polypus will be found in the ampulla of the rectum, just above the sphincters. When they are not within reach of the finger the use of the proctoscope is essential. An enema may be of value, not only in evacuating fecal contents, when present and interfering with an examination, but its employment will often cause

the extrusion of a polypus from the bowel, so that it may be readily inspected. It is possible for polyp to be mistaken for internal hemorrhoids or prolapsus. Piles are not pedunculated and are multiple, and prolapsus should occasion no difficulty in diagnosis. The differential diagnosis between benign and malignant growths is not always readily made without a microscopic study. The point in favor of the growth being benign are: its occurrence in a young subject; its mobility and the fact that it is pedunculated; the absence of odor; its protrusion and its slower growth.

PROGNOSIS.—As a rule, the class of growths under consideration do not recur after removal; therefore, the prognosis, based upon a proper treatment is most excellent. If untreated, the outlook is not so favorable, for benign neoplasms, as previously stated, may undergo cancerous degeneration.

TREATMENT.—The treatment of these tumors is essentially surgical. Prompt removal is the only safe advice to give,—the actual cautery, the ligature, the snare, or torsion being employed. In many of the simpler cases of polypi, anesthesia is not required. Small polypi may be, with comparative safety, twisted off with a pair of hemostatic forceps.

When a tumor can be withdrawn from the rectum it may be clamped, as close as possible at its point of attachment, cut off and its base thoroughly seared with a paquelin cautery; or the pedicle may be ligated and the tumor removed at a point below the ligature. When the growth is some distance up the bowel, it should be treated either by torsion or the use of the electric snare.

No dressing is necessary after such an operation. The bowels should be kept moved daily and the rectum should be irrigated with antiseptic solutions every day for a week or ten days, after which time, as a rule, no further attention will be required.

REPORT OF A CASE.—The following case is reported because, from my experience, it is somewhat unique. In the first place, the growth, for its size, was located at a very unusual site,—just at the verge of the anus; it could be replaced within the bowel and when so situated gave the patient no marked discomfort, but when allowed to remain outside the anus, even a short time, it would become congested and very painful. The history is as follows:

Mr. E. H., aged seventy-eight, a retired merchant, was referred to me by Dr. I. W. Hollingshead, of this city. The patient was in excellent general health.

FAMILY HISTORY.—Mother died at age of fifty-six, cause unknown. Father killed in an accident. A brother died of a dropsical affection. An aunt died of pulmonary tuberculosis.

PERSONAL HISTORY.—Usual diseases of childhood. At the age of four had scarlet fever, but no untoward permanent sequelæ, other than an arthritis of the knee. As a result of the arthritis, he has had frequent falls but no serious injury.

Present trouble dates back forty years, though it was first ascribed to the presence of hemorrhoids. He complained of a protrusion which occurred only at stool and at times had bleeding from the rectum, the blood being bright red. It was always necessary to replace the protrusion. Defecation was always difficult and painful and after a stool there existed

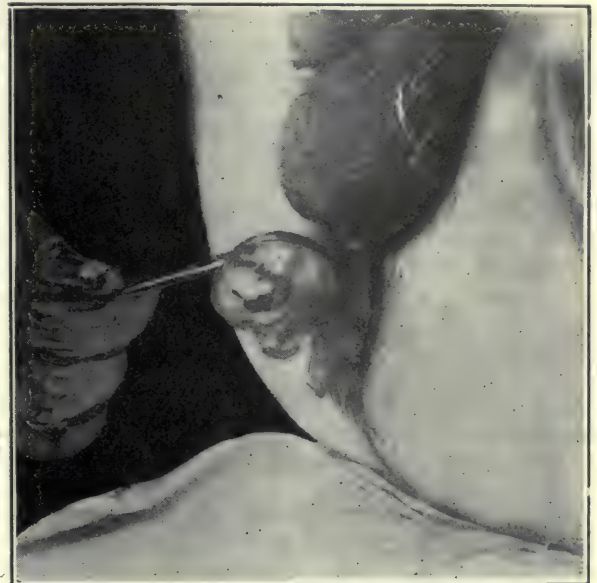


Fig. 2.

some discomfort as well as a feeling that the act had not been completed. Rectal tenesmus often occurred and was a troublesome symptom. For some time frequent micturition occasioned much annoyance.

EXAMINATION.—External examination disclosed the presence of several cutaneous skin-tabs. Digital examination revealed the presence of quite a large pedunculated mass within the rectum, which was readily protruded by having the patient sit upon a closet. The mass resembled greatly that of a fetus and was attached at the anal verge, on the left side, towards the coccyx. Its size and shape are described accurately in the pathological report, kindly made for me by Dr. James A. Kelly. The mass could only be replaced with some difficulty, and, I might add that it was owing to the fact that the patient was having more and more trouble in this respect that led him to seek advice.

Operative interference was advised and to this the patient readily consented. The operation was performed, the day following my first examination, at the Polyclinic Hospital. Ether was administered,

the sphincters divulsed and the tumor protruded (see illustrations on Figs. 1 and 2). The major part, or over three-quarters of the mass, was covered with skin and on its inner aspect there was a hemorrhoid covered with mucous membrane, the natural red color of which contrasted markedly with the pale whitish appearance of the larger portion of the polypus.

The pile was then dissected from the rest of the mass, and, when this was completed, it was ligated and the part below the ligature was removed with scissors. As the polypus was then practically part of the cutaneous tags, the entire mass of redundant skin and the polypus was dissected from the anal margin in one piece. But little bleeding occurred. A ten-grain iodoform suppository was inserted in the bowel, iodoform gauze was packed in the wound and pads and a T-bandage completed the dressing. In three days the patient was able to be out of bed, and in a week's time went home.

Dr. J. A. Kelly's pathological report follows:

GROSS EXAMINATION.—Specimen consists of a pedunculated mass about four inches in length by one and one-half inches in greatest width, and was removed from the anus at the muco-cutaneous junction. It is greyish-white in color, soft, and irregularly roughened and covered by thickened epidermis. On section, specimen shows thickened epidermis and a soft grayish mass which is apparently edematous.

MICROSCOPIC EXAMINATION.—Shows epidermis covering a mass of fibrous tissue which is markedly edematous and in places shows myxomatous degeneration. Throughout section there are areas of leucocytic infiltration.

DIAGNOSIS.—Fibrous polyp, undergoing myxomatous degeneration and acute inflammation.

I am indebted to Dr. Willis Reed Roberts, Senior Resident at the Polyclinic, for the Hospital records of the case, and to Mr. T. Richard Jeffcott for the photographs from which cuts have been produced.

610 ARCH STREET.

RELATION OF RECTAL DISEASES TO THE GENERAL NERVOUS SYSTEM.

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The modern aspect of medicine, brought about by the relation of microorganisms to the human body, taken as a soil, has awakened the highest interest in the functions of the rectum, and the necessity of keeping these functions within strict physiological limits. For the body to maintain itself in a fair state of health, not only must the various glands and blood-making organs have their physiological integrity, but also the serum must retain its opsonin-producing power and the polynuclear leucocytes should abound, to digest easily the invading organism weakened by the opsonin. For this auto-protective system to remain unimpaired it is necessary that the sympathetic nervous system, as well as the cerebro-spinal system continue in a normal state.

My object is to briefly show the intimate connection of the sigmoid and rectum, with the sympathetic and cerebro-spinal nervous system; how by various rectal disorders the nervous system becomes thoroughly demoralized, predisposing the patient to many reflex troubles; to demonstrate the great absorbing power of the rectum, for gases and fluids, and thereby to show the toxic influence of constipation upon the general system, in weakening the auto-protective powers of the economy, the opsonins and phagocytes.

The cerebro-spinal system gives the muscles of the rectum branches from the sacral plexus while the superficial perineal, a branch of the pubic, supplies the levator ani, and the skin in front of the anus. The inferior hemorrhoidal, sometimes existing independently of the sacral plexus, supplies the lower end of the rectum and anus. The pudic is controlled by the same part of the cord as the sciatica. Hence the irritation from a fissure or ulcer located within the anus may be transferred down the limbs to some distant parts. The intimate relation of this nerve to the genito-urinary organs, explains the frequency with which disorders of urination are associated with rectal affections. It is through the sympathetic system, however, that a more profound impression is produced upon the general economy from the rectum. The sympathetic nerves in this region come from the mesenteric and hypogastric plexuses; it also receives branches from the lumbar and sacral plexuses.

¹ The Diagnosis and Treatment of Diseases of the Rectum, fifth edition, 1888, page 189.

² Ziemssen's Cyclopaedia, vol. 7, p. 634.

³ A Treatise on Diseases of the Anus, Rectum, and Pelvic Colon, 1902, p. 712.

⁴ Op. cit., p. 711.

⁵ Gant: Diseases of the Rectum and Anus, second edition, 1902, p. 484.

⁶ Quoted by Dr. W. H. Van Buren, Lectures Upon Diseases of the Rectum and the Surgery of the Lower Bowel, New York, 1892, p. 102.

⁷ Diseases of the Rectum and Anus, second edition, London, 1890, p. 289.

⁸ Diseases of the Rectum and Anus, second edition, 1892, p. 243.

⁹ The Rectum and Anus; Their Diseases and Treatment, 1887, p. 298.

¹⁰ Gant, loc. cit., p. 488.

¹¹ Chas. B. Kelsey: Diseases of the Rectum and Anus, fourth edition, 1893, p. 270.

¹² Op. cit., p. 245.

¹³ Op. cit., p. 292.

¹⁴ Transactions of the London Pathological Society, 1883.

¹⁵ British Medical Journal, p. 551, April 12, 1879.

¹⁶ Op. cit., p. 292.

¹⁷ Op. cit., p. 349.

¹⁸ Op. cit., p. 747.

¹⁹ London Lancet, August 18, 1883; vol. 2, p. 633.

²⁰ Op. cit., p. 256.

²¹ London Lancet, 1883, vol. 2, p. 881.

²² Diseases of the Rectum and Anus, second edition, 1890, pp. 296 and 297.

²³ Op. cit., p. 268.

²⁴ Op. cit., p. 722.

²⁵ London Lancet, November 12, 1887.

²⁶ Op. cit., p. 253.

From this intimate connection of the rectum with the sympathetic it follows that any constant irritation in this region is betrayed to the sympathetic system as a symptom which I have called the pain of the sympathetic, that is, a constant degree of low shock, commonly called a condition of general depression. During this state, in reality a minor condition of shock, all the functions of the body are lowered. This condition, obscure in itself, has been sometimes diagnosed as neurasthenia, a name often too handy to cover the symptoms resulting from an overlooked insult to the sympathetic system.

Hemorrhoids, anal fissure, fistula in ano, prolapse of the rectum, therefore undermine the system by the actual sensation of pain through the cerebro-spinal system, and by the depression or condition of constant minor shock through the sympathetic, they result in anemia, hence a diminished polynuclear leucocytosis—that is, diminished auto-protection of the body against infections and diminished function of the glands for internal secretions.

I have seen many patients who have become neurasthenic and were cured when relieved of internal hemorrhoids. I have especially gathered observations of four cases of ulcer of the stomach, in whom hemorrhoids had existed for five, eight and nine years, who persistently neglected the treatment of hemorrhoids and whose general debility was followed by chronic dyspepsia, and this by ulcer of the stomach. In one instance the patient still refused operation for the ulcer; it perforated and death followed. In the other three cases, a gastroenterostomy was performed and the hemorrhoids were removed, at the same sitting.

I have also found hemorrhoids associated with various forms of malignant growths. Of course, we know that any part of the body that is constantly irritated is especially prone to malignant degeneration, the constant irritation predisposing the spot to cancerous infection. Another factor comes from the constant depression of the sympathetic, which we know is a predisposing cause for cancer elsewhere in the body. A tuberculous fistula in ano aside from its local significance, is a constant source of possible tuberculous infection to the rest of the economy and it therefore should be promptly removed.

But by far the most common affection of the rectum and that which directly and indirectly results in the most harm to the economy is constipation from its various causes. This condition, so universally spread, has never received the attention it

deserves, and the future will reveal more and more its baneful effects on the human race. Mere talk, advice and warning on the subject does not suffice. We should convince ourselves on this matter and convince our patients by the following plain facts: The rectum is a reservoir for feces, true, but nature has endowed it with a quality as dangerous as it may be useful, that is, absorption.

The absorbent vessels of the rectum are much more numerous than are generally supposed. The lymphatics run backward between the two layers of the meso-rectum in which there are four or five glands, through the sacral to the lumbar glands. The veins are the superior, middle and inferior hemorrhoidal. The superior hemorrhoidal vein returns the blood to the portal vein and liver, while the middle and inferior hemorrhoidal veins return the blood to the internal iliac. Hence the passage through the liver and through the general circulation of fluids and gases from the rectum. This absorbent property has been recognized and utilized in therapeutics for rectal feeding. It is remarkable how long and how effectually this can be done.

Some three years ago I had a patient who had an ulcer of the stomach with repeated hematemesis, and marked cardio-vascular disease. An operation on the stomach was impossible. He was treated by rectal feeding alone for eight weeks, without loss of weight. It is well known to-day that Murphy's gradual instillation of normal salt solution in the rectum is a most valuable adjunct to our surgical therapeutics in peritonitis. As many as eight quarts of normal salt solution have been absorbed in twenty-four hours without discomfort to the patient. This fluid passes into the lymphatics and veins. If the abdominal cavity be drained, a large amount of this fluid, modified by the serum of the blood, is poured into the dressings.

Ether may be freely administered by the rectum, with resulting anesthesia. Oxygen is absorbed by the rectum in the treatment of asphyxia. These facts give us an idea of how absorbent the rectum is and therefore how easily can be absorbed into the system the deleterious fluids and gases of fecal matter which are allowed to stagnate in the rectum. What clinician can tell us to-day the number of ailments to which the body is predisposed by constipation! The toxic fluids and gases are certainly absorbed in direct proportion to the hardness of the fecal matter of constipation. Their effect upon the internal secretions, upon the opsonins and upon the phagocytes has but lately been studied, and the full damage produced by them is not yet known.

Some, however, are the following:

Auto-intoxication, as manifested by a furred tongue, bad taste, foul breath, nausea, thirst, salivary complexions, certain skin affections (acne, urticaria, etc.), anemia, weak pulse, lassitude, anorexia, insomnia, loss of memory, inability to concentrate the mind, infantile convulsions and other phenomena. Surgeons have learned from experience that when a patient has a sudden rise of temperature which cannot be accounted for by infection, the best thing to do is to administer a cathartic or high enema, and thoroughly empty the bowel, a procedure which, if followed by a prompt reduction of the temperature, proves that local absorption was the cause of the trouble.

Headaches of various degrees of intensity are a consequence of constipation, among women, sick headaches, which may occur periodically, and are not relieved until free catharsis is resorted to. Neuralgia is a frequent result of constipation. Loomis called it "a cry of the nerves for better blood." It may occur in any part of the body.

A constant auto-intoxication leads to imperfect nutrition of the cellular elements of the body. The first to suffer are those of the lowest order, the fibro-elastic tissues, which enter into the composition of the various fasciæ and suspensory ligaments of the viscera. As these cellular elements weaken under the influence of auto-intoxication, they no longer possess sufficient power to sustain the various viscera and ptoses occur—gastroptosis, enteroptosis, coloptosis, all of which aggravate the condition by increasing the sympathetic shock or depression of the system, by decreasing the physiological efficiency of these various organs, by diminishing the peristaltic action of the colon, allowing it to assume a V-like or hammock-like or festooned position wherein fecal matter accumulates, leading to further intoxication. Thus we see that the initial habits of constipation which may result at first from removable causes, lead to a genuine vicious circle—that is, intoxication, malnutrition, coloptosis, fecal retention or impaction which in its turn accentuates the auto-intoxication.

I have at present a case in point. A merchant of Philadelphia, 65 years of age, had suffered for many years with symptoms of neurasthenia, headaches, foul breath, pains in the back and abdomen, anorexia, and vomiting. He had been treated by several prominent clinicians of Philadelphia, who having recognized his habits of constipation, had prescribed purgatives, etc., which would relieve him awhile, but he soon fell into his former condition. Fearing that he was developing a malignant trouble

in the abdomen requiring an operation, he applied to me for help. Clinical and x-ray examination failed to show malignant disease. Gastroptosis, however, was diagnosed and also a festooned or a V-shaped transverse colon. Purgatives would cause an overflow of the transverse colon into the descending colon and rectum, but would not empty the transverse colon, which remained full after the purgative as well as before it. It then occurred to me that my patient suffered with chronic auto-intoxication in spite of the course of treatment to which he had been subjected during the several years past. To relieve this condition I performed appendicostomy. Through the fistula he introduces an ordinary male catheter and washes out his colon two or three times a week, removing thereby all possibility of absorption of putrefaction fluids and gases from the dependent colon. A snugly-fitting abdominal supporter relieves the symptoms of enteroptosis. After three months' treatment he had apparently rejuvenated many years, and now enjoys excellent health.

My firm conviction is that many obscure troubles can be traced to an etiology more or less similar to the case just related and more attention should be directed to constipation as an immediate or remote cause.

It is not my intention to give an exhaustive study of any one phase of the many diseases of the rectum. I wished in a very concise way to point out some of the remote consequences of rectal affections based upon the anatomical, physiological and pathological relations of this organ to the general economy, the importance of which are not sufficiently recognized.

INJURIES TO NERVES.

In immediate traumata of nerves accompanying fractures, the causative agent is such as to produce most frequently contusion or laceration; when the agent is directly applied, as in a blow, the nerve may be forced against the bone and jammed during the instant of contact, or it may be lacerated. Or the fragments of bone may bruise, stretch, or tear the nerve, even in fractures from indirect violence. These accidents rarely, however, produce complete division of a nerve; division occurs mostly from perforating or incising agents, as from fire-arm missiles, or cleaving instruments—axes, cleavers, saws, etc. These accidents introduce the complications of open wounds and it is often possible in treating such wounds by modern methods, to ascertain by direct examination the nature and extent of the nerve injury.—CARL S. OAKMAN in *The Journal of the Michigan State Medical Society*.

THE ROENTGEN TREATMENT OF MALIGNANT DISEASE.

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All treatment of malignant disease has for its object its eradication. Surgical removal by radical operation is the best treatment whenever the total extirpation of the malignant tissues is consistent with the recovery of the patient. Whatever the character of the treatment employed, it must always be as radical as the patient's vitality will permit to assure success.

In dealing with malignant disease this principle must guide the use of the Roentgen rays. Unless it destroys the cellular activity of every pathologic cell, it fails of its object and stimulates their growth. There is, however, danger of destroying healthy tissue and the difference between success and failure lies in the ability of the Roentgenologist to adapt his dose to the vitality and resistance of the individual patient, so that he devitalizes the pathologic tissue without injuring the normal.

Roentgen treatment should be employed only as a secondary and supplementary treatment to follow radical surgical removal wherever that is possible. As a post-operative treatment it should always be employed wherever a suspicion remains that malignant cells have been left behind. It is of great value since it is capable of destroying those microscopic foci of disease which have escaped the eye of the surgeon, or the macroscopic lesions which were too intimately connected with vital structures to permit of their surgical removal. It thus gives an added assurance of the complete eradication of the disease which should not be denied the patient.

The necessity for the employment of some supplementary method of treatment, with radical operation is shown by the best statistics which show that recurrence is the rule in two-thirds of the cases operated upon. Thus Professor Halstead finds in his Johns Hopkins Hospital statistics that 85 per cent. of mammary carcinoma are cured when operated upon before axillary or supra-clavicular metastasis has taken place. But these statistics also show that only one-third of all cases present themselves for operation at this favorable period. It is this other two-thirds where the mortality is very high, which shows that a complete radical operation could not eradicate the disease and that some form of supplementary treatment is essential to a decrease in the mortality. If this

is true of mammary carcinoma, it is more needed in malignant disease situated elsewhere.

It is difficult of demonstration possibly, that post-operative treatment is responsible for the freedom from recurrence which follows its employment, but its demonstrated efficiency in hopelessly inoperable primary cases, and in inoperable recurrences is positive evidence of its efficient destructive action on malignant cells.

As a palliation for the suffering in the last stages of malignant disease, this agent has no equal, and when employed solely for this purpose it has demonstrated its efficiency, not only by relieving pain, but also by checking the progress of the disease.

The results obtained in the treatment of epithelioma and rodent ulcer have been shown to be equally permanent and more cosmetic than those obtained by operation. Thus, in these superficial malignant lesions, an action upon the cellular vitality of the malignant cells has been demonstrated, which finds its counterpart in the more serious forms of malignancy.

An additional reason for its post-operative employment is the destruction of the lymphatics which follows its use. Clinical observations by surgeons in operating upon cases of tuberculous cervical adenitis have frequently been published, which show that the lymphatics have been changed into fibrous cords by short courses of previous Roentgenization. But while noting the operative difficulty produced, they failed to realize that the channels for metastasis had been destroyed and the disease localized. This action upon the lymphatics is in keeping with the selective action of the Roentgen rays which affect the cells of the body in the inverse ratio to their vitality.

The destruction of pathologic cells and of the lymphatics which the Roentgen rays have been shown to produce are theoretically a sufficient basis for the employment of post-operative treatment. Clinically its value has been demonstrated in cases where the operative findings showed that the disease had progressed so far that the operation was of necessity incomplete and recurrence probable, and yet no return of the disease has followed, where post-operative treatment has been employed. It has also been demonstrated by the results in hopelessly inoperable cases of primary or recurrent malignant disease where the patient has remained well for six years or more.

The effect of this agent has also been seen in cases too far advanced to expect anything more than palliation, where the malignant disease has

been destroyed, its progress checked, and life prolonged for years in comfort, with freedom from pain, without the grave disorders of the secretions that follow the use of opiates and for a much longer period than could have been secured by their employment.

The accumulated evidence of such cases reported by reliable authors is sufficient to justify the opinion that all has not been done, for patients suffering from malignant disease, that should have been done, if they have not had the benefit of the efficient therapeutic post-operative employment of the Roentgen rays. Likewise that the palliation afforded by this treatment is the best which can be given to hopelessly inoperable cases of malignant disease.

The results of the Roentgen treatment as an adjuvant to operation, as a possible cure in some inoperable cases and as the best palliative in all, can be best illustrated by the following cases which have come within the author's experience.

Since the danger of recurrence from malignant disease is always greater in earlier life, the following case is selected as showing the adjuvant effect of post-operative Roentgen treatment.

In July, 1903, the author removed a mammary carcinoma with axillary involvement from Mrs. F. A. B., æt 32, and followed the operation by vigorous Roentgenization. This patient has been recently examined and is free from recurrence now over six years after the operation and treatment.

Other cases of uterine carcinoma and serious malignant disease have remained free from recurrence and have increased in weight and improved in general physical condition; they are, however, too recent to be considered cured.

The efficiency of this agent is more emphatically demonstrated by those advanced inoperable cases, both primary and recurrent, who owe their lives solely to Roentgen treatment.

In June, 1903, Mr. William McM., was referred for treatment of an inoperable sarcoma of the left tonsil. He had previously been examined by surgeons and was considered inoperable. Internally the tumor reached well beyond the median line and below the root of the tongue. Externally it extended beyond the angle of jaw. Under vigorous treatment it gradually contracted to a hard fibrous mass a little larger than the normal tonsil and now after six years the patient remains well without any sign of metastasis or recurrence.

Miss E. A. had been under surgical treatment for three years for a cystic carcinoma of the right temporal region. In addition the toxin treatment had been employed, but without success. When referred for treatment the carcinoma was three

inches in diameter and the size of half a small orange. It lay entirely above the zygoma and filled the temporal fossa. The effect of treatment was shown by the disappearance of the acute inflammation, the healing of the ulcerated surface and the final absorption of the entire growth, leaving apparently normal skin covering the floor of the temporal fossa. The patient is still under observation with no sign of recurrence. A microscopic examination, made while the patient was under the care of Dr. Wm. B. Coley, of New York, showed the growth to be a carcinoma.

Although such recoveries are the exception in such grave conditions, they are evidence of a potency in this agent which makes its application imperative in all cases of malignancy. The chance of permanent recovery in apparently hopeless cases increases *pari passu* with the development of efficient technic in the application of this agent, and at the same time it stands as the most effective agent for palliation in these grave conditions. It not only lengthens life by retarding the progress of the disease, but also makes life comfortable by stopping the pain without the use of opiates.

This freedom from pain without narcotics also frees the patient from the disorders of digestion and secretion to which the drugs give rise. A healthy appetite follows upon normal digestion while normal mental and physical activity are not interfered with. In many cases this agent promotes the cleansing and healing of superficial ulcerations, so that the patient dies from the effect of visceral metastases.

These results have been made evident in the following cases, two of which have been previously reported:

Mrs. B. F. G. had a double mammary carcinoma with extensive ulcerations following a radical operation. The superficial ulceration healed and the malignant growths increased in size. The patient was freed from pain and enabled to pursue her ordinary life and social duties for over two years. Finally she died from internal metastases.

In the case of Mrs. C. J., æt 74, a mediastinal metastasis from an atrophic scirrhus produced complete dysphagia, so that she had to be fed for two weeks per rectum before she was treated by the Roentgen rays. She was able to drink a glass of milk one week after treatment commenced and gradually regained her strength and the ability to take semi-solid foods and to pursue her ordinary avocations. She lived for two years in comfort with occasional courses of treatment.

A case of carcinoma of the antrum which showed the benefits of palliation, particularly, was Miss I. T. W., æt 46. The growth had made its appearance on the superior alveolar margin and a Roentgen examination showed that it involved not only the entire antrum but its bony walls. The

disease remained quiescent under treatment for a year and then gradually extended until the whole side of the face was involved below the eye. In spite of this extensive ulceration, the patient had no pain, slept well, her appetite and digestion were good, and she was enabled to go driving until three days before her death. She never received one dose of morphine during the two years she was under treatment and never had pain. She died from centric paralysis of respiration, due to the spread of the disease backward through the orbit.

A case of great interest in which the patient is still under treatment and where there is a possibility that a cure may finally result, is that of Mrs. J. W. H., æt 28, who was first seen early in May of this year. She had had, in June, September and December of last year three operations for a malignant hemorrhagic sarcoma of the lower abdominal wall. She was referred to me by Dr. Howard A. Kelly of Baltimore, who saw her first in consultation late in April, five months after the last operation. A careful examination convinced him that although no metastases were present, surgery could hope to do no more in her case. The growth had recurred immediately after the last operation, and showed itself through the line of the wound before the dressings had been removed. When seen during the first week of May of this year, six months after the last operation, a cauliflower growth six by nine inches was found rising about three inches above the skin, with a pedicle five inches in diameter. The patient was emaciated, cachectic and very anemic. She had been in bed for five months. She was sleepless from pain, which was relieved only by frequent doses of morphine, which had so deranged her digestion that vomiting was frequent and her appetite very poor. Under heroic doses of Roentgenization, three milliamperes, at eight inches anodal distance, for fifteen minutes, three times a week, her pain was relieved, she slept well and her appetite returned with good digestion as the opiates were discontinued. She gained in weight and strength, the cachexia disappeared entirely, and her lips, finger-tips and cheeks which had been blue-white, showed the marked increase in hemoglobin. Under continued vigorous treatment, the growth rapidly decreased in size, the patient freed from the opiates ate and slept well and was free from pain; she grew stronger and her flesh increased in amount and healthy appearance, until she was able to be up and about her room at the end of ten weeks. The known vascularity of the growth made more cautious treatment necessary as the pedicle of the tumor was reached, while the increased absorption of toxins due to the destruction of the growth beneath the skin made severe treatment impossible. A depression following the absorption of toxins, as the pedicle of the growth was destroyed made her condition more critical, but at present the balance has seemingly been restored, and while the remnants of the growth still remain, they are so devitalized that their final eradication seems assured. There yet remains some auto-intoxication, but in view of her

ability to overcome it as already exhibited, there seems to be a fair chance of ultimate recovery.

The great malignancy shown by this growth and the well-known danger of metastases at a distance, in such cases renders it necessary to consider the results so far attained as only palliative. The relief from pain, the disappearance of the marked cachexia, the rapid increase in hemoglobin, the restoration of normal sleep and the improvement in appetite and general physical condition point to a palliation which could be afforded by no other method of treatment, while the prolongation of life for seven months under such favorable condition makes it seem possible that even an ultimate recovery may be expected.

Of the technic employed in the treatment of malignant disease, little that is definite can be said except that each case must be a law unto itself, and that this agent, like all others must be employed with as much energy as the vitality of the patient will permit. It should always be borne in mind that a latent effect produced by the absorption of toxins is always to be expected and treatment of massive malignant disease, must from time to time be suspended, or at least decreased in severity to permit of recovery from auto-intoxication and the exhibition of its full intensity, otherwise the cumulative action of the toxins may be too great for the vitality and resistance of the patient. In general, a dose of ten minutes with two milliamperes of current, with tube of moderate hardness, its anode eight inches from the skin, given three times a week, has been the average in the treatment of malignant disease. In sarcoma or other growths of fibrous character, more highly penetrating rays have been employed, but the experience of the Roentgenologist is essential in modifying this average dose to suit the resistance of the patient and to adapt to the malignancy of the growth that amount of energy which will result in the eradication of the diseased tissue without endangering the life of the patient. An aluminium filter is always used.

It will then be seen that the Roentgen rays have demonstrated their efficiency as a remedial agent in the treatment of malignant disease, not only in superficial epithelioma, but also in the graver forms of malignancy.

Their established potency renders them a valuable supplemental agent to radical operation by destroying the lymphatics and any residual foci of malignancy. Therefore, every patient, suffering from malignant disease should submit, as early as

possible, to the radical surgical removal of all the visibly diseased tissue that it is possible for the surgeon to remove, and should then be given the benefit of a vigorous course of post-operative Roentgenization.

This course of treatment must be vigorous as otherwise it may do more harm than good, and must be guided by the same principle as surgical operation, *i. e.*, as severe as the vitality of the patient will permit.

The value of this agent as a palliative in hopelessly inoperable cases of malignant disease, has been shown by the complete recovery of patients upon whom operation was impossible, and by the relief of pain and the prolongation of life in comfort under normal physical conditions to a degree not attained by any other method of treatment.

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THE CONSERVATION OF THE MIDDLE TURBINATE.

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Were the middle turbinated body always diseased—that would be a different story.

Some years ago, some one discovered that the removal of a middle turbinate which pressed upon the nasal septum relieved a headache stubbornly resistant to all other measures. So, many middle turbinates were sacrificed upon the altar of enthusiasm.

One of Pudd'nhead Wilson's maxims runs as follows: "We should be careful to get out of an experience only the wisdom that is in it—and stop there; lest we be like the cat that sits down on a hot stovelid. She will never sit down on a hot stovelid again—and that is well—but also she will never sit down on a cold one any more." Too often there was no distinction made whether the middle turbinate was normal or not, or whether it pressed upon the septum or the septum pressed upon it. Moreover, too little respect was accorded the function of the middle turbinate. In fact, the function of this highly important nasal structure was apparently lost sight of in the enthusiasm of the chase of a new method of treatment. Consequently many were operated upon in the vain hope of thus relieving a reflex headache. But the importance of the function of this structure reasserted itself as the zeal for its removal became chilled by repeated therapeutic failure.

Recently, however, since our attention has been concentrated upon the nasal accessory sinuses, and

especially upon the relation of these sinuses to diseases of the eye, the middle turbinate is again bearing the brunt of operative attack both for diagnostic and therapeutic purposes.

No one should disparage any operative measure for the relief of a pathological condition, nor should anyone advocate the preservation of the middle turbinate at any and all hazards. The game may be worth the candle. But the point to be observed is that a normal middle turbinate cannot be sacrificed without interfering with the functioning power of the nose, and the function of the nose is to cleanse, warm and moisten the air in its passage to the lungs,—a process in constant operation from the moment of birth to the moment of death, and in this process the middle turbinate plays a very conspicuous part.

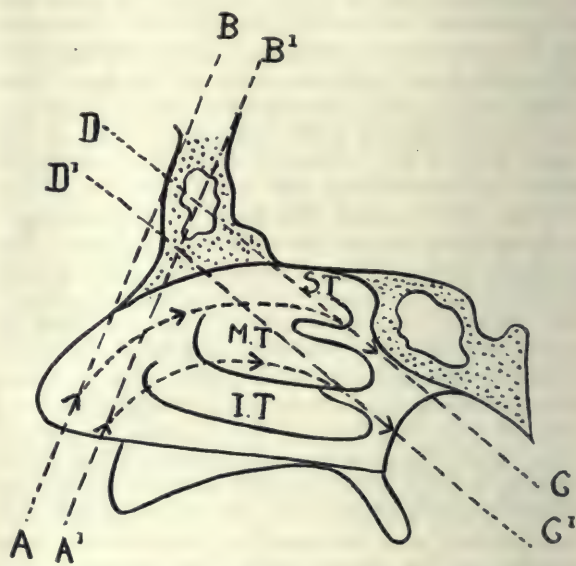


Fig. 1. A B, Direction of the Current of Air as it Enters the Nose. D C, As it Enters the Nasopharynx. A C, The Direction of the Current as it Passes Through the Nose. I. T., Inferior Turbinate Body. M. T., Middle Turbinate Body. S. T., Superior Turbinate Body. Adapted from Lambert Lack.

A current of air in passing through an opening enters at right angles to the plane of the opening, and in passing out of an opening the same physical law holds good. By applying this law to the current of inspired air it will be seen that the anterior and superior portions of the septum, the anterior end of the inferior turbinate and practically the whole of the inferior and internal surfaces of the middle turbinate are the parts chiefly concerned in warming and purifying the air. The nasal mucous membrane, however, is not of the same anatomical structure throughout. In passing over a heated surface the air is warmed directly in proportion to the amount of heated surface over which it must pass. Nature has therefore placed

in certain portions of the nasal mucous membrane a tissue which can alter the area of its surface to accommodate itself to the varying conditions of the inspired air. The tissue which can thus contract and expand is the cavernous tissue, and this cavernous tissue reaches its highest development in the median surface of the inferior turbinate and in the inferior surface of the middle turbinate,—portions of the nasal fossa in the direct line of the current of inspired air. (See Fig. 1.) Incidentally it may be mentioned that this cavernous tissue also reaches

there is sufficient reason for the removal of the hypertrophic portion. If it press too closely upon the lateral wall of the nose and so cause imperfect ventilation of the nasal sinuses which drain into the middle meatus, we might be warranted in at least breaking it away from its encroaching position. Such a procedure interferes but little with its function, if at all. But too frequently is the greater part of this structure excised merely to make a sinus diagnosis, and mayhap, a negative one. From the nonchalant manner in which many operators

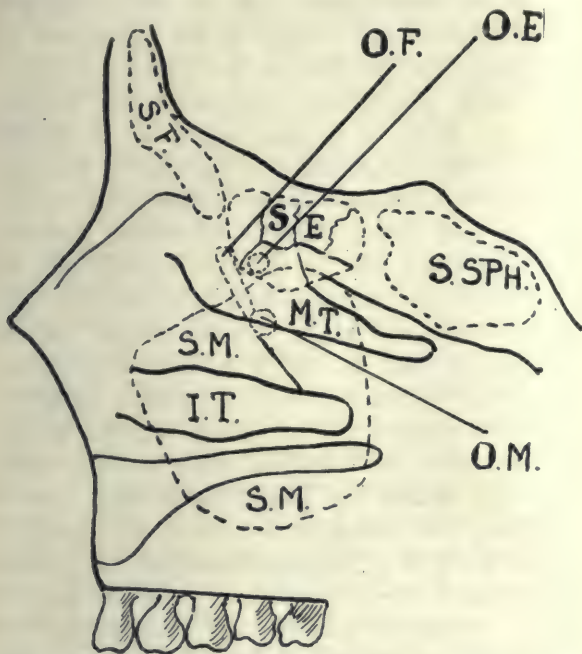


Fig. 2. S. F., Frontal Sinus. S. E., Ethmoidal Labyrinth. S. Sph., Sphenoidal Sinus. S. M., Maxillary Sinus. O. F., Opening of the Frontal Sinus. O. E., Opening of the Eth. Sinus of the Middle Meatus. O. M., Opening of the Maxillary Sinus. M. T., Middle Turbinate. I. T., Inferior Turbinate. Diagram Adapted from Hajek, Showing How the Middle Turbinate Covers the Openings of the Nasal Accessory Sinuses of the Middle Meatus. Hence the Temptation to Remove It.

a high grade of development in the inferior portion of the inferior turbinate, and to a less extent on the antero-superior portion of the septum,—the tubercle. It is thus evident that the inferior portion of the middle turbinate is a highly functioning organ and its removal must be accompanied by loss of its function.

A patient with a headache, unrelieved as yet, has claims, perhaps, which even a middle turbinate must respect. But before making the sacrifice let us assure ourselves that it is worth while,—that there is not only a fair probability that the symptom will be relieved but that its relief will not be accomplished by the substitution of a greater evil for a lesser one. Herein lie many things which should influence our judgment. Were the middle turbinate diseased,—hypertrophied, for instance,—

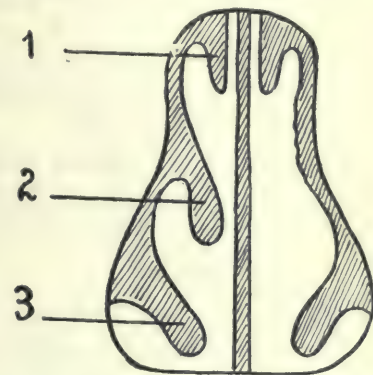


Fig. 3. Showing the Comparative Amount of Air Space Before and After Resection of the Middle Turbinate. 1, Superior Turbinate Body. 2, Middle Turbinate Body. 3, Inferior Turbinate Body.

refer to its removal, particularly in this nasal accessory sinus era, one would infer that its importance to the economy is worthy of but scant consideration.

Usually when the sinuses are subject to chronic disease the middle turbinate is diseased also; in the case of the sinuses of the middle meatus, the anterior portion, and with the sinuses of the superior meatus, the posterior portion. But there are cases of sinus disease, particularly acute cases, in which the middle turbinate is not the seat of appreciable pathological change; and the greatest obstacle in our path to a diagnosis of many such cases is the middle turbinate body itself which may prevent the proper intranasal examination. Here is a choice of two evils. The middle turbinate once removed cannot be restored, and there will follow, in all probability, if enough of the structure be taken away, a dry naso-pharyngitis which becomes a source of continual annoyance to the patient and which requires perennial local treatment. On the other hand, its removal may be all that is required for a complete cure.

Some rhinologists contend that no evil effects follow excision of the normal middle turbinate. In case of a thick nasal tubercle, a deviation of the upper portion of the septum or a nasal ridge, all of

which might take the place of the physical mass of the excised turbinate, but which could not take the place of all of its functional activity, this statement might be allowed to pass unchallenged. But these structures, with the possible exception of the septal tubercle, do not embody in their mucous membrane the cavernous tissue,—the tissue without which no nose can functionate properly. Furthermore, it is difficult to believe, in spite of statements to the contrary, that a very roomy nose is compatible with nasal comfort, to say nothing of the secondary changes in the lower respiratory tract.

THE PRESENT STATUS OF THE CATARACT OPERATION.

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It might naturally be surmised that an operation which has been practised a century or more, had long since attained a stage of perfection which permitted no improvement in its details, and it might well be supposed that at this late day in the evolution of the operation, operators the world over would aim at removing the lens from the eye in precisely the same manner, all employing the same technic, the same character and model of instruments, and with the same treatment of the patient both before and after the operation. In the event of complications arising during the course of the operation, it is of course easily conceivable that certain modifications might be necessitated in the performance of the various steps, which would demand a deviation from the generally adopted technic, and give opportunity to the operator to show his originality and resourcefulness in properly meeting the exigency of the occasion.

Ophthalmologists are, however, by no means unanimous in their methods of operating for cataract, or in their treatment of the case either before or after operation, and not a year goes by that some one does not come forward with some modifications of previously existing methods or with some new device or procedure, which he lauds as having proved of especial service in his hands.

The essential points of difference among operators lie, however, in the performance of the details of the operation, for nearly all follow the same general type of procedure and aim at the removal of the cataract by means of what is known as "the

flap extraction," associated with capsulotomy. Some operators perform an iridectomy before the lens is removed, while others deliver the lens through an unbroken pupillary sphincter, but the practice of incising the capsule of the lens with a cystitome or of removing some of the capsule by forceps is practically universal.

Within the past few years, however, the ophthalmic world has been startled with the details of an operation for cataract which departs very materially from the type which for so long a time had in most of its details won universal favor and was generally practised. I refer to the procedure for the removal of the lens in its capsule, as advocated and extensively practised by Herbert Smith, of India, a surgeon-major in the British Army.* The advantage to be gained by this procedure is the avoidance of secondary cataract, for after the lens and its capsule have been removed, there is nothing left to block the pupil, and the rays of light pass into the interior of the eye without interruption. Major Smith claims for the operation on that account a particular advantage in cases of immature and hypermature cataracts, for after the removal of immature cataract by capsulotomy, as is well known, more or less cortex frequently blocks the pupil, demanding one or sometimes two discissions before the pupil is cleared, while in hypermature cataract, the capsule of the lens is often so thickened and the zone of Zinn so weakened that the act of cystitomy not infrequently causes dislocation of the lens. This greatly complicates the operation, the delivery of the lens under such circumstances being often attended with considerable loss of vitreous.

Undoubtedly the removal of the lens in its capsule is the ideal operation for cataract, but can this ideal be attained with safety to the eye, and are the visual results obtained by this method actually superior to those which follow capsulotomy? At this juncture it may be well to state that it is the practice of nearly all surgeons to remove hypermature lenses in the capsule, by reason of the thickness and toughness of that membrane in this class of cases resisting the cystitome, so that the adaptability of the Smith operation under these conditions need not be considered.

I will not dwell upon the steps of Major Smith's operation at this time, other than to state that the delivery of the lens in its capsule is effected by him by forcible expulsion of these structures from the

* There is good evidence that the earliest operators for cataract removed the lens in its capsule, and this method has had some adherents even in modern times, the elder Pagenstecher, for example, having removed 853 cataracts in this way.

eye, after a more or less forceful separation of the capsule from its attachments to the zone of Zinn by pressure and counterpressure through the cornea by means of a strabismus hook. It goes without saying that an experience gained by operating upon 20,000 cataract cases* must bring with it a remarkable degree of dexterity, yet even Major Smith confesses to loss of vitreous in a fraction over 5 per cent. of his cases, and acknowledges that with beginners it may be even 10 per cent.

Of 104 extractions witnessed by Arnold Knapp in Smith's clinic, many of the operations being done by Knapp himself, partial prolapse or incarceration of the iris occurred in 17 cases, escape of vitreous in 13, suppuration in 2, and subchoroidal hemorrhage in 1.

Dr. Greene, of Dayton, Ohio, a recent American convert to the Smith operation, obtained an average vision of 20/27 in 72 cases, out of a total of 75 operated upon by him by the Smith method. Loss of vitreous occurred in 13. Two cases had but light perception and one case was lost from infection. Dr. Greene had the kindness to remove the lens in its capsule from several of my cases at the Wills Hospital last June, with, however, but indifferent success, though due to no lack of skill upon his part. From the observation of these cases, and from a study of the statistics, as well as from the testimony of others who have performed the operation, I personally am convinced that the operation is much more difficult than that performed with capsulotomy and that it is invariably attended with much greater loss of vitreous. As a consequence of the greater danger of loss to which it exposes the eye, I am therefore decidedly of the opinion that the practice of the removal of the lens in its capsule should be reserved for hypermature cataracts.

From an experience gained by operating upon more than 600 cases of senile cataract, I believe the best results are to be obtained only by the greatest conservatism and by the exercise of the most sedulous care in carrying out all the details of a careful removal of the lens by capsulotomy.

The method which I employ is as follows:

Lack of space prevents my dwelling long upon the preparation of the patient. Suffice it to say that if the general health is impaired, it should be righted as far as is possible before the operation is undertaken. No pathological condition of the general system is, however, in itself a contraindication to

the operation, though the operator must be aware that the existence of ill-health will frequently prolong and perhaps finally mar the success of his venture. The existence of certain diseases of the eye is, however, a positive contraindication, and the operator would be rash indeed who would proceed in the presence of an infective conjunctivitis or diseased lacrimal apparatus. The mucous membrane of the conjunctiva and of the lacrimal passages must be free from noxious germs before the globe is opened, or the loss of the eye is practically assured. The cure of a conjunctivitis by proper astringents, and the removal of a diseased sac with the obliteration of the canaliculi must be accomplished before the operator thinks of removing the lens.

With these few general remarks upon the preparation of the patient, it may now be stated that he should be admitted to the hospital or should be prepared for the operation at home, at least twenty-four hours beforehand. Where it is at all feasible, the operator should insist on performing the operation in a hospital and as far as possible always in the same hospital and in the same operating room. It is a very great advantage to be absolutely familiar with one's surroundings, and the surgeon who operates with always the same illumination upon the eye, be it daylight or from an artificial source, with the patient upon the same height of couch or table, has a great advantage over his colleague who attempts to operate under frequently changed conditions. It goes without saying that the eye surgeon above all others should be a man of most careful habits, and of steady nerves, and that he should have trained his hands and educated his eye by operating upon many dead and living animals' eyes before he attempts to restore sight to a fellow-being.

Twenty-four hours before the operation, the patient should be bathed, particular care being given to the neighborhood of the eyes. Actual tubbing and shampooing of the patient is not always desirable, as many are too old and feeble to endure this to them unusual practice. It is then my custom to fill the conjunctival cul-de-sac of the eye to be operated on with a bichloride salve, 1 to 3000,* and to apply a bandage which is not removed until the cocaine is instilled just before the operation.

A mild purge gauged to meet the habits of the patient, is given at bedtime, and if the bowels are not opened shortly after rising an enema is admin-

* In a paper which he read before the American Ophthalmological Society while visiting this country a year ago, Major Smith stated that he had performed 20,000 cataract operations, about 17,000 of which had been in the capsule,—truly an operative experience which has hitherto never been even approached by any one operator.

* Formula suggested by Dr. J. A. White, of Richmond, Va.:

Hydrarg. bichlorid.....	gr. i
Sodii chlorid	gr. v
Petrolati	oz. vi

istered. The morning of the operation the patient is permitted a light breakfast of tea or coffee, with an egg or cereal, but for the next forty-eight hours a liquid diet (milk and broths) is maintained, though in exceptional cases, a soft diet is instituted at once after the operation.

From the moment the patient enters the hospital, or from the commencement of preparation at home, he should be under strict surveillance, and all about him should adopt the most cheerful and encouraging demeanor. A nurse for a cataract case should be extraordinarily alert, not only to cheer the mind of the patient, but also to render the constrained position of lying flat on the back, which is often essential for the first day or two after the operation, least irksome and uncomfortable.

For the proper removal of a cataract from the eye, it is most essential that the operator devote much thought and attention to the instruments which he employs. Not only is it necessary that they should be absolutely sterile, which is best attained by boiling the non-cutting instruments, and immersing the cutting ones in 75 per cent. alcohol for ten minutes before operating, but they must be in the best of order and adapted to the eye from which the cataract is to be removed. The shape of the speculum must vary in different cases, and a uniform length of knife is not always desirable. The knife must be sharp, not only on the point, but along its entire cutting edge, and its back should not be too broad. The tips of the iris forceps should meet perfectly and the blades of the scissors should be sharp and closely coapted when closed. The cystitome should be slender, and its cutting tip small and very sharp. All should be close to the surgeon's hand, though they should be handed to the operator by his assistant, as it behooves the former never to permit his eye to wander from the seat of operation for a moment, so necessary is it for the surgeon to note the first impulse of the patient to rotate the eye from the proper position or to squeeze the lids.

A large bottle of boracic acid (gr. x tof. ʒi) and bottles containing a 1 per cent. solution of atropine, a 2 per cent. solution of cocaine, and a 1 to 3,000 solution of adrenalin, should be at hand. All these solutions should be prepared with the greatest care and the bottles and droppers rendered sterile. What does it profit, if after exercising the greatest care in all other steps of the operation, one dirty drop is instilled into the eye.

With the patient finally exposed for operation upon the table, his face, excepting the eyes, veiled with a sterile sheet, and the surgeon in his turn

fully prepared (his hands having been carefully scrubbed with green soap, bichloride and alcohol and his face and body properly covered with a sterile mask and gown), 2 or 3 drops of the 2 per cent. solution of cocaine are instilled into the eye at intervals of three minutes, and a few drops of the adrenalin solution once. The patient, the eye and the surgeon are now ready and the supreme moment has arrived. It is well, however, to contrive to make this moment as little taxing as possible on the patient, as well as on the operator, and I make it an invariable practice to have some cheerful conversation with the patient, prior to introducing the speculum into the eye. A smile or two will relax the rigidity of the facial muscles and a short drill in making the patient rotate his eyes in various directions may later save an eye from loss, when the inclination is to roll the eye upwards, but the maintenance of a downward gaze is absolutely essential.

After the speculum has been introduced, and the globe steadied by fixation forceps applied just at the lower limbus of the cornea, I insert a moderately long Graefe knife of the Weiss model, about 1 mm. within the limbus of the cornea and several mm. above the horizontal plane of the pupil, so that the upper two-fifths of the circumference of the cornea is included in the incision. The incision is finished in the conjunctiva, care being exercised to gain 2 or 3 mm. of conjunctival flap. My experience has taught me that healing is infinitely more rapid when a conjunctival flap is obtained than when the entire incision falls within the cornea, while the few drops of adrenalin are usually sufficient to check the hemorrhage, which by entering the anterior chamber might obscure the field of operation. I have never seen a complication which I thought attributable to the use of adrenalin, and I regard the objections which have been raised to the employment of the drug at this stage of the operation as fanciful.

The section happily made and iridectomy performed—for I hold that the removal of the lens without iridectomy should be reserved for selected cases only, *i. e.*, cases in which the cataract is quite ripe, and the patient liable to be quiet during the after-treatment—the cystitome is introduced, and the capsule incised. This may be done in a variety of ways. I prefer an incision which takes the form of an X, but in any event the instrument should be handled with the greatest delicacy, for I am convinced that too rough handling of the lens at this stage frequently dislocates it, which not only ren-

ders its expression during the next stage difficult, but also favors the prolapse of vitreous.

At this stage of the operation many operators, I think, make the mistake of asking their patients to look down too far, the pressure of the extra-ocular muscles being then exerted upon the globe, causing the lips of the wound to gap and the vitreous to prolapse. With a properly placed incision and with a gentle but free cystotomy and with the proper direction given to the globe, I believe that loss of vitreous will rarely occur, and since I have given rigid adherence to these details, I have had prolapse of that body only when the patients were most unruly or the vitreous itself was fluid from disease.

I accomplish the expression of the lens in most cases with the speculum still in position with the aid of spoons; and by carefully following up the removal of the mass of the lens by firm but gentle motions of these instruments upon the cornea in pressure and counterpressure, I am able to get rid of most cortical matter as well. In recent years I have practically discontinued irrigating the anterior chamber by means of a syringe, having found the syringe, even when used with the greatest caution, to favor prolapse of the vitreous.

After all the lens mass has been removed, the lips of the wound are carefully inspected, the greatest care being exercised to see that the pillars of the iris are freed from the wound. The eye is then gently flushed with boric acid, a few drops of atropine are instilled into the lower cul-de-sac, the bichloride salve is liberally smeared over the lids, and a firm compress bandage is applied to both eyes, over which a Ring mask is placed for further protection.

The next forty-eight hours are long and wearisome ones for the patient, for unless there be some contraindication, some feebleness or deformity of body, for example, which prevents, he is enjoined to lie flat upon his back. It is true that the nurse is instructed to shift him about, and ease the constraint of his position as far as possible with pillows, but flat on his back he must remain the greater part of the time, to avoid any pressure upon the eye by the lids or extraocular muscles. A liquid diet is prescribed, and no drugs are administered unless some unusual complication should arise. Ten per cent. of all cataract patients become delirious two or three days after the operation, the mental derangement varying from a mild wandering delirium to a violent mania. To quote from my chapter devoted to this subject in "The Eye and Nervous System," "treatment consists in improving the state

of the cerebral circulation by nitroglycerin and strychnine, and in controlling the delirium by hypnotics, in a supplementary diet, and in the administration of alcohol if the patient has been habituated to the use of intoxicants. As the statistics do not show any improvement in the symptoms to follow the removal of the bandage from the unoperated eye, this step is not to be advised, unless the wound caused by the operation be thoroughly healed. There is also no reason to discontinue the employment of atropine. Constant oversight and judicious and tactful nursing are most essential, and amelioration in the mental condition frequently follows the installation of a proper person by the bedside."

At the end of forty-eight hours, the bandages are removed. The anterior chamber should be found closed and the eye free from infection. After the operated eye has been gently flushed with the boric acid solution, and a few drops of atropine instilled, a light dressing is applied. The patient is then permitted to sit up by the side of the bed, the eye being dressed every second day for a week, when the bandage is removed. If much cortical matter remain to block the pupil, dionin is administered in strengths ranging from 2 to 10 per cent., on account of its absorbent qualities. At the end of three weeks the eye should be sufficiently quiet to permit of discission, if this procedure be demanded, the correcting lens being finally adjusted some two or three weeks later.

The above is a description of the methods which I employ in the removal of senile cataract, all consideration of complications during the operation having been purposely omitted, owing to the necessity for brevity. Suffice it to say, however, that a careful technic and a rigorous attention to all details of the operation will render the complications and accidents gratifyingly few.

NITROUS OXIDE-OXYGEN vs. ETHER.

The natural immunity of the patient is little, if at all, impaired by nitrous oxide-oxygen anesthesia, as contrasted with a distinct impairment under ether anesthesia. Likewise there is less surgical shock under nitrous oxide-oxygen than under ether anesthesia. In patients handicapped by infection or by a previous impairment of the central nervous system, nitrous oxide permits a safer operation than does ether. The advantage of nitrous oxide over ether is greater when the handicap is in the central nervous system than when such handicap is in the heart.—GEORGE W. CRILE, in the *Winconsin Medical Journal*.

CYCLODIALYSIS.*

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History.—The observation of Fuchs and Axenfeld on detachment of the choroid after extraction of cataract and after iridectomy for glaucoma, and also after sclerotomy and incisions into the angle of the anterior chamber, suggested to Heine¹, first assistant in the clinic of Professor Uththoff at Breslau, in 1905, a new operation which he called cyclo-dialysis. His object was to effect a reduction of intraocular pressure by the establishment of an artificial communication between the anterior chamber and the suprachoroidal space, and by the accompanying detachment of the choroid, thought to be due to the backward flow of the aqueous humor through the artificial passage made in the ligamentum pectinatum. Heine's inference was that the suprachoroidal space afforded an outlet for the evacuations of liquids from within the eye. The anticipated choroidal detachment, however, did not occur, though in successful cases for months the tension remained subnormal.

Technic.—After perfect cocaine-anesthesia, the patient is directed to look upward and slightly inward and a spring speculum is inserted. The eye ball is fixed with forceps and an incision is made with the scissors into the outer, lower part of the conjunctiva, 5 mm. from the limbus and at right angles of it. (Fig. 1.) When the sclera has been brought into view, a vertical incision 2 mm. long, 5 mm. from and parallel to the limbus, is made with the lateral edge of the lancet deftly and slowly, layer after layer through the scleral tissue down to the black ciliary body. (Fig. 2.) In order to prevent bleeding from the scleral vessels, a solution of adrenalin should be instilled into the wound from time to time during the procedure. Caution is necessary to avoid cutting the anterior ciliary veins which are often enlarged in the pathologic conditions calling for this operation. By obscuring the field, unnecessary bleeding not only entails difficulties in the remainder of the operation, but also, by finding its way into the anterior chamber, it proves an obstacle to subsequent observations.

The eyeball is held by fixation-forceps, and an ordinary iris-spatula is carefully introduced obliquely into the path of the incision, and passed between and parallel to the sclera and ciliary body, close to the posterior surface of the sclera, so as not to

get behind the iris. (Fig. 3.) If resistance is met, the spatula should be withdrawn and the obstructing scleral fibers severed. Just before the anterior chamber is reached, the resistance may be caused by ciliary fibers running radially into the sclera. This complication is overcome by turning the instrument slightly toward the iris. The end of the spatula is now seen in the angle of the chamber, which has been freely opened by the division of the *ligamentum pectinatum*.

The third step is the *detachment of the ciliary*

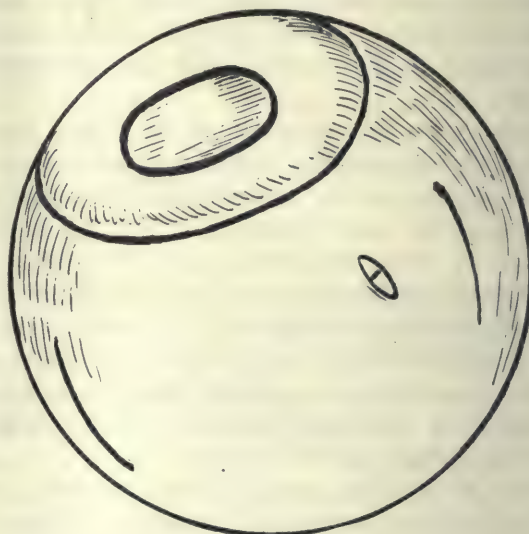


Fig. 1. Diagram of the Incision Into the Conjunctiva.

body from the sclera by the spatula carried forward with side movements, care being taken not to injure the ciliary body and thus avoid bleeding into the anterior chamber. (Figs. 4 and 5.) If hemorrhage into the chamber should occur during the operation, compression must be applied at once. The aqueous humor does not necessarily escape unless the wound is stretched by a slight forward inclination of the spatula.

After-treatment.—After the careful removal of the instrument, the conjunctival wound is sutured, and a compressed bandage is applied.

Complications.—The protection afforded by a projection of the sclera almost eliminates the danger of an *iridodialysis* or an *injury to the canal of Schlemm*. A very frequent complication, however, is the *detachment of Descemet's membrane* from the cornea, due to the faulty position of the spatula. The end of the spatula should be sharp enough to cut through the fibers of the *ligamentum pectinatum*. If it is dull, a sense of resistance will give warning that the instrument is caught in front of the *ligamentum pectinatum*, and there is danger of separating Descemet's membrane from the corneal

* Read at a meeting of the Section on Ophthalmology, College of Physicians of Philadelphia, November 18, 1909.

parenchyma—an accident that would cause the posterior surface of the cornea to become turbid for a few weeks.

In order to make a thorough test of the efficiency of the operation in lowering the intraocular tension, Meller², of Vienna, who has had a valuable experience in the employment of cyclodialysis, purposely retained the aqueous humor in the eyeball, and thus avoided the necessity of post-operative use of myotics. He admits, however, that in

tion suggested by Krauss⁴, of Breslau, and Gifford⁵, of Omaha, seems more logical, viz., that the ciliary processes, proved by Deutschmann to be an important factor in the increase of pressure, undergo atrophy as a result of this operation.

Indications.—Cyclodialysis is technically very simple. It is less radical and less dangerous than an iridectomy, but it is not reasonable to expect its performance to be followed by very successful results in cases in which an iridectomy is not fea-

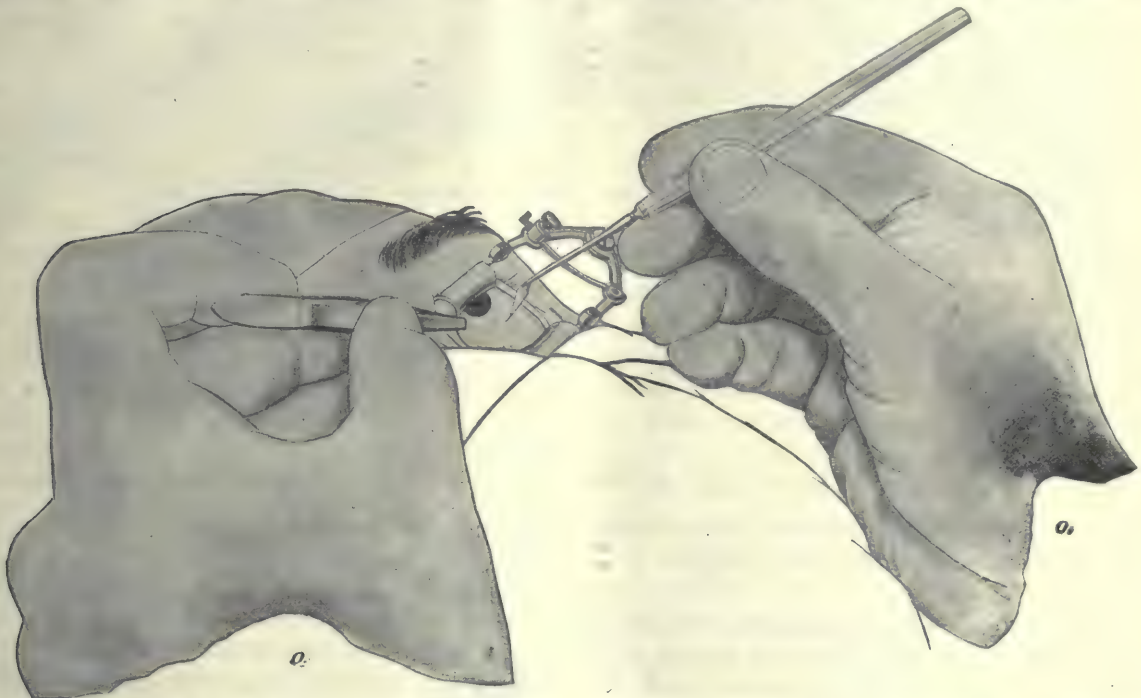


Fig. 2. Cyclodialysis on the Left Eye; the Incision With the Lancet (Keratome), Which is Made to Cut with Its Side. (After Meller.)

some cases it may be imperative to let out the fluid in order to immediately lower the tension. Meller also agrees with Uhthoff, who took part in the discussion of Heine's paper at Heidelberg, in recommending the use of eserine to keep the iris free—a valuable aid in a future iridectomy.

The real effects of the operation become manifest only after a lapse of one to three days. According to the results in Meller's list of forty-eight cases, in 30 per cent., the benefits were permanent and the dull cornea cleared up; in 40 per cent. the tension began to rise again after a few weeks; in about 30 per cent. (chiefly cases of glaucoma malignum) the effects were nil.

The manner in which the reduction of intraocular pressure is effected after cyclodialysis, Heine failed to explain satisfactorily. His idea that it was due to the free opening of the filtration angle by the artificial passage between the anterior chamber and the suprachoroidal space is not tenable, for this channel does not remain permanent. The explana-

tion, or has already been done without benefit. To judge fairly the efficacy of any surgical procedure and give definite percentages of relief and failure, it must be the first and elective operation. For this reason, all statistics to date regarding the true value of cyclodialysis are neither reliable nor markedly significant.

With such little reported experience, it is manifestly impossible to fix definitely distinct indications for cyclodialysis, as either an elective or an auxiliary operation. It is, however, of great value as a preliminary to an iridectomy, because the dangers of the latter are obviated by the reduction of tension. The same may be said, however, of the more simple operation of posterior sclerotomy. Cyclodialysis should be gravely considered in primary glaucoma when the very high tension, widely dilated pupil and absence of anterior chamber militate against the performance of iridectomy as dangerous and in fact almost impossible. It is indicated in glaucoma when one eye has already been de-

stroyed by *glaucoma malignum*, or by a severe hemorrhage subsequent to iridectomy, or when it is undesirable to confine the patient to bed because of extreme nervousness, persistent coughing, great prostration, or old age.

Cyclodialysis has proved of advantage in certain cases of *secondary glaucoma*, viz.:

in the other three cases. In eleven of the fifteen cases, the diminution of intraocular pressure continued during the time of observations, which varied from two months to two years. He concludes conservatively that, although the operation cannot replace the classical iridectomy or its recent modifications in incipient cases of chronic glaucoma, "yet

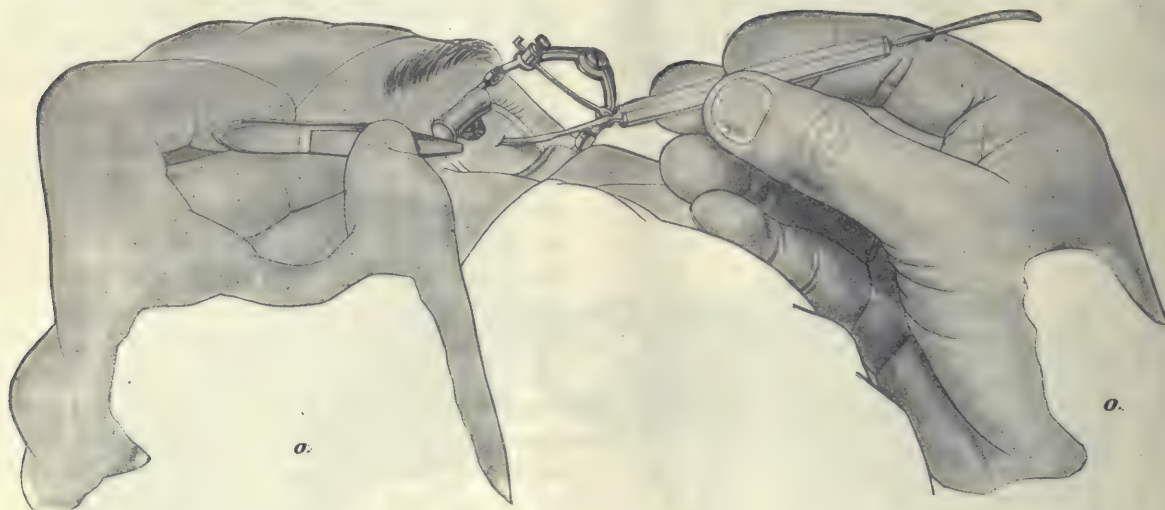


Fig. 3. Insertion of the Spatula Through the Scleral Wound Until it is Seen in the Angle of the Chamber. (After Meller.)

1. Cases due to anterior synechia when iridectomy will not suffice to reduce the intraocular pressure.

2. Cases of glaucoma following the extraction of cataract, provided, of course, that the edges of the coloboma are in proper place.

3. When the lens has been dislocated into the vitreous, as in these cases the inevitable escape of the humor during the performance of an iridectomy is a disadvantage, in fact, a positive danger.

Review of Recent Literature.—I. O. Denman reports⁵ three successful operations, one of which was performed instead of an iridectomy for purely cosmetic reasons, the patient objecting to a disfiguring coloboma.

W. H. Wilder, of Chicago, reports⁶ a "gratifying result in a case of acute glaucoma with almost complete absence of the anterior chamber, the patient being under observation for from four to five months.

E. V. L. Brown, of Chicago, reports⁷ twelve operations on nine glaucomatous eyes. Five of the operations were successful—all being in cases of secondary glaucoma, three chronic, one acute and one subacute.

Arnold Knapp, of New York, reports⁸ eighteen test cases—in fifteen of which iridectomy had failed or was contraindicated. The operation failed

it is indicated in the advanced cases of chronic glaucoma, especially those in which iridectomy has not succeeded in reducing the tension." He also con-



Figs. 4 and 5. Lateral Movements of the Spatula in Order to Detach the Ciliary Body. (After Meller.)

cedes that it may be of great value as a preliminary to an iridectomy.

For bibliographic assistance in the preparation of this paper I am indebted to Dr. Grace Andrews.

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THE POST-OPERATIVE TREATMENT OF URETHROTOMY—INTERNAL AND EXTERNAL.

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In view of some annoying sequelæ that have recently occurred in one or two cases of external urethrotomy, I have been very forcibly impressed with the fact that the post-operative treatment of these cases is worthy of far more attention and consideration than is generally accorded it in textbooks, where the subject is usually dismissed with a few lines. The surgeon who after operating upon the urethra, satisfies himself with introducing a drainage tube, and in external urethrotomy in inserting a strip of gauze, and leaves the subsequent treatment to some member of the junior staff, or an untrained interne, will occasionally discover upon subsequent inquiry that the condition of the patient is far from satisfactory. Such unfortunate happenings I have almost always been able to trace to a want of knowledge, on the part of the caretaker, usually an interne, of the proper technic of the post-operative treatment of such cases. This want of knowledge I frankly admit is probably in large part due to neglect on the part of teachers of medicine. As a rule the patient is brought into the amphitheater, an internal or external urethrotomy is performed before the class, a drainage tube is introduced, the patient is wheeled out, and too often that is all there is to it. On the other hand, the personal equation must be taken into consideration to account for tedious recovery at times. It is in the main true, I think, that these cases are not regarded by the average resident hospital staff as either delightful or edifying, so that when the surgeon is obliged to depend upon a careless or incompetent assistant in the post-operative dressings of these cases, trouble is very often apt to ensue. The indications for the performance of internal and external urethrotomy do not fall within the scope of this article, but where either one or the other has been decided upon a preliminary course of internal treatment in the shape of some genito-urinary antiseptic drug should be administered as a routine measure.

As regards internal urethrotomy little need be said concerning the after-treatment. In the past the main question in dispute among genito-urinary surgeons in connection with this operation, has been whether to drain with a retained catheter or not.

Personally, I feel that the catheter tied in for 48 to 72 hours is of the utmost value, as a means of preventing both fever and possible hemorrhage. The latter very often occurs as a very troublesome sequel to the operation, and is controlled by nothing so well as the tied-in catheter. Bearing in mind the persistent tendency to secondary urethral contraction after internal urethrotomy the surgeon should divide the structure with the urethrotome at least two to four sizes higher than the caliber of the sound which he expects to subsequently pass. The passing of full-sized sounds at regular intervals constitutes a most important factor in the successful after-treatment of internal urethrotomy. The first sound should be passed upon the removal of the retained catheter, say on the third or fourth day. Irrigation of the urethra should always precede and follow the passage of the sound. This treatment should be carried out twice a week for a month after the operation, once a week for another month, and every two weeks for another month. I think it would be advisable in most cases to have the sound passed subsequently once a month for a year following the operation.

The after-treatment of external urethrotomy is of the utmost importance as regards the future welfare of the case, and requires for its conduct an unlimited amount of painstaking and conscientiousness on the part of the medical attendant. The control of hemorrhage occurring at the time of the operation, and the occasional persistent oozing following the operation, are problems often causing much mental disquietude to the physician in charge. In either event the solution of the problem lies in properly packing with gauze. The packing must be made tight enough on the wound to control the bleeding, a good-sized compress of gauze should be placed against the perineum, and a cross-of-the-perineum bandage is to be applied. When there is any tendency to hemorrhage this bandage is of far more service in checking it by pressure than the more commonly employed T-bandage. Too often it happens that the post-operative treatment of these cases, left in the hands of internes, is most unsatisfactory. Gauze packing is roughly hauled out of the wound and the fresh gauze is packed in with a force and enthusiasm entirely misapplied. It cannot be too strongly emphasized that, save in those cases where there has been considerable bleeding, the packing of the wound subsequent to external urethrotomy should be light in character. This is a point I think very often overlooked by those having the post-operative treatment in charge, the chief idea so often being

to pack into the wound all the gauze it can possibly hold. The dressings should be changed every other day, irrigation of the urethra and bladder with nitrate of silver, 1-8000, preceding and following each change of dressing.

It is most important that full-sized sounds should be passed four days after the operation, to be repeated every four days. I have seen quite a number of cases where the last state of the patient was worse than the first, by reason of a failure to carry out faithfully this post-operative line of treatment.

One more thought suggests itself to me as having quite a little bearing upon the rapid convalescence of these patients. I feel that the perineal tube should be removed in about six or seven days and that the patients should be allowed and encouraged to sit up either in bed or in a chair upon removal of the tube. I have seen cases of external urethrotomy dragging on week after week in bed, where a few days out of bed have worked wonders as far as convalescence was concerned. In the occasional cases where there is a tendency to a perineal fistula the retained catheter will as a rule bring about a speedy closure. Even under these circumstances it is not necessary to confine the patient to bed. Very little attention has been paid in most textbooks on genito-urinary surgery to the time required to bring about a complete cure after the operation of external urethrotomy. I have not at hand the statistics concerning all the cases that I have operated upon, but I would put the minimum time at three weeks and the maximum at almost any time—generally from four to eight weeks.

1321 SPRUCE STREET.

DIAGNOSIS OF CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS.

The principal condition likely to be mistaken for pyloric stenosis is simple spasm. Here all symptoms would disappear at times, constipation alternate with diarrhea; dyspepsia is usually present, vomiting is less significant, and the disturbance of nutrition less progressive. The other conditions with which it may be confounded need only be mentioned, viz.: atresia of the pylorus, narrowing of the duodenum, toxic vomiting, and congenital narrowing of the esophagus. The diagnosis rests upon a careful study of the history, particularly the age of the patient at the time of onset; the time and character of the onset, and the symptoms previously mentioned.—WILLIAM N. BRADLEY in the *New York Medical Journal*.

CANCER OF THE STOMACH: A STATISTICAL STUDY.

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The importance of the subject renders an apology for further burdening the literature unnecessary. According to the census of 1900 the number of deaths reported as due to diseases of the stomach, including gastritis, was 13,484. Of these cancer of the stomach exacted the highest toll. In the Registration Area for the same year 4,220 deaths occurred from this disease. As the Registration Area included approximately 40 per cent. of the population of the United States, about 9,000, or 70 per cent., of all deaths due to diseases of the stomach, were caused by cancer. Taking into consideration the increase in population and increase in cancer incident, it is likely that about 12,000 people die each year of cancer of the stomach in the United States.

It is now generally conceded that the stomach is the most frequent site of primary cancer. However, William H. Welch (*Cancer of the Stomach. Pepper's System of Medicine*, vol. 2, p. 533), from a study of 31,482 cases, says: "From this table . . . I should still be inclined to place the uterus first in the list of organs most frequently affected with primary cancer and to estimate the frequency of gastric cancer compared with that of primary cancer elsewhere as not over twenty-five per cent." The table he refers to shows the stomach the site in 21.4 per cent. and the uterus in 29.5 per cent. Virchow stated that the stomach was the site of primary cancer in 34.9 per cent. of all cases. d'Espine's figures were even higher. His studies showed the stomach to be the site in 45 per cent. According to the Census Bureau reports out of a total of 140,088 deaths from cancer, the stomach and liver combined were the sites in 36.4 per cent. and the female genitals in 14.7 per cent. Again the same statistics show the stomach to be the site in 43.06 per cent. in males and 24.47 per cent. in females. The combined table shows for the stomach 38.76 per cent. against 27.68 per cent. for the uterus. In the female the uterus is undoubtedly the most frequent site.

In the present study of 2,268 autopsies made at the Philadelphia General Hospital, the distribution is as follows: Total number of cases of primary cancer, 121. Breast, 6; stomach, 45; uterus, 13; liver, 10; eye, 1; esophagus, 8; ileum, 2; pancreas,

5; mediastinum, 3; tongue, 1; orbit, 1; rectum, 3; kidney, 1; bladder, 3; larynx, 1; brain, 1; prostate, 5; gall-bladder, 3; colon, 1; thyroid, 1; penis, 2; ovary, 1; common bile duct, 2; duodenum, 1; peritoneum, 1. In this series the stomach is the site in 37.2 per cent. of the cases and the uterus in 10.7 per cent.

Other malignant growths found in this series were: Sarcoma of brain, 2; mediastinum, 1; retro-peritoneal, 2; pelvis, 2; ovary, 1; liver, 2; lungs, 1; heart, 1; skull, 1; leg, 1; back, 1; antrum, 1; groin, 1. Hypernephroma, 4.

Of the cases of cancer of the stomach 32 were in males and 13 in females. The average age of the patients was 58. The youngest was 38 and the oldest 76 years. Fifteen, or 35 per cent., occurred between the ages of 45 and 55. Four cases were in the colored race and 41 in the white.

Metastasis occurred in the following order: Liver, 16 cases; abdominal lymph nodes, 9; pancreas, 8; omentum, 4; mesentery, 4; lungs, 3; kidney, 3; transverse colon, 3; spleen, 3; peritoneum, 3; pleura, 1; both adrenals, 1.

Emaciation was noted in eighteen cases. In one case the clinical diagnosis was adiposis dolorosa.

Healed tuberculous foci were found in eight cases and chronic adhesive pleurisy in sixteen, so that evidences of tuberculosis were present in twenty-four cases. In no case was there any evidence of an active tuberculous lesion. This is worthy of note, as a large portion of the population of the hospital is made up of the actively tuberculous.

Williams calls attention of the rarity of cancer in the syphilitic. In the present series there were but two cases which showed any evidence of the disease. Erythema was present in but one case.

Changes were noted in the heart muscle in 22 cases, in the heart valves in 13, in the kidneys in 24, the spleen in 15 and in the pancreas in 3. Perforation of the stomach was present in 4 cases. Acute peritonitis was noted in 7 of the cases and chronic peritonitis in 13. Hyperplasia of the lymph nodes was found in 6 cases.

Fibroids of the uterus were present in 3 cases and ovarian cystoma in 1 case. Autopsy 1336 B presents the interesting association of primary cancer of the prostate and primary cancer of the stomach. Autopsy 1684 B records a case of hypernephroma associated with primary cancer of the stomach. This case is reported in full by Foster and Gerhard in the Philadelphia General Hospital Reports, vol. 7.

The site of the cancer is not reported in all the

cases. Of those recorded, the pylorus was the site in 18 cases, the lesser curvature in 4, and the cardiac end in 2. Stenosis was present in 7 cases and atresia in 2.

It is now generally believed that gastric ulcer always precedes gastric carcinoma. Unfortunately in this series histological examinations are not available. In only one case is there any evidence macroscopically of ulcer (Autopsy 2145 B). In the whole series of autopsies, 2,268, gastric ulcer was found 9 times, hour-glass stomach 4, simple papilloma 3, tuberculous ulcer 1, peptic ulcer 1, and sarcoma in association with ulcer 1.

Gall stones were present in 1 case of cancer of the stomach. The total recorded cases in the entire autopsies studied were 86. From this it would not appear that the cancerous were more prone to gall stones than the non-cancerous, as contended by Williams. In the 5 cases of pancreatic cancer gall stones were present in 2. Gall stones were present in 1 of 3 cases of cancer of the gall-bladder and in 1 of the 2 cases of cancer of the common duct. In 120 cases of diseased conditions of the pancreas gall stones were present in 9 instances. While from these few cases it might seem that gall stones played an important part in the etiology of cancer of the gall-bladder, ducts and pancreas, it does not appear that they are entitled to the importance given them in other diseases of the pancreas.

A résumé follows of the post-mortem records of cancer of the stomach given in this series. I wish to acknowledge my indebtedness to Dr. Randle C. Rosenberger, chief of the pathological department of the hospital, through whose courtesy I was able to compile these reports.

AUTOPSY 24 A. White female, Ireland, age 47; widow. Emaciation (marked). Chronic adhesive pleuritis. Fatty liver. Gall-stones. Compression dilatation of common duct. Chronic interstitial splenitis. Metastatic cancer of spleen. Scirrhus cancer of head of pancreas. Scirrhus and colloid cancer of lesser curvature of the stomach with ulceration into transverse colon. Secondary cancer of retro-gastric glands.

AUTOPSY 63 A. White female, age 72. Scirrhus cancer of pylorus.

AUTOPSY 76 A. Negro male, age 45. Scirrhus cancer of pylorus. Dilatation of the stomach with hypertrophy of muscular coat. Pericardiac adhesions. Stenosis of pylorus. Chronic adhesive perisplenitis.

AUTOPSY 77 A. White male, Ireland, age, 40. Cancer of pylorus. Scirrho-encephaloid cancer of the gastric sub-mucosa. Hypertrophy of heart with dilatation. Stenosis of pylorus.

AUTOPSY 87 A. White female, no age given.

Encephaloid cancer of pyloric segment of stomach. Adhesions to liver and transverse colon. Perforation of anterior wall of stomach. Acute general peritonitis. Uterine fibroids. Chronic adhesive peri-hepatitis. Parenchymatous degeneration of the liver. Chronic interstitial colitis. Chronic adhesive pericolicitis. Gastric adhesions to head of pancreas. Senile atrophy of ovaries.

AUTOPSY 115 A. White male, age 54. Scirrhus cancer of pylorus. Chronic adhesive peritonitis. Atresia of pylorus. Secondary cancer of pancreas. Poly-cystic hydronephrosis.

AUTOPSY 153 A. White male, age 57. Emaciation. Scirrhus cancer of pylorus. Atresia of pylorus.

AUTOPSY 294 A. Negro male, no age given, Emaciation. Adhesive pleuritis. Croupous pneumonia. Abscess and edema of lungs. Hypertrophy of left ventricle. Chronic aortic and mitral disease with calcification. Atheroma of aorta. Chronic caseous tuberculosis of bronchial lymph nodes. Congestion of liver. Parenchymatous nephritis. Cylindrical epithelioma of pylorus. Hypertrophy of stomach. Hyperplasia of adjacent lymph nodes.

AUTOPSY 338 A. White male, age 57. Atrophy of heart. Chronic adhesive peritonitis. Scirrhus cancer of pylorus. Gasrectasis. Chronic catarrhal gastritis. Secondary cancer of liver. Hyperplasia of abdominal lymph nodes.

AUTOPSY 356 A. White male, age 38. Emaciation. Erythema. Parenchymatous degeneration of the heart. Chronic adhesive pleuritis. Hydrothorax. Edema of lungs. Emphysema of lungs. Acute serous peritonitis. Chronic interstitial splenitis. Cancer of cardiac end of the stomach. Metastases to liver, spleen, pancreas, pleura, omentum and mesentery. Stenosis of cardiac end of stomach. Hyperplasia of abdominal lymph nodes.

AUTOPSY 449 A. White male, Ireland, age 62. Emaciation. Jaundice. Chronic adhesive pleuritis. Hypostatic congestion and edema of lungs. Brown atrophy of heart. Chronic interstitial nephritis. Cancer of stomach. Hour-glass stomach. Secondary cancer of transverse colon, liver, omentum, mesentery, diaphragmatic pleura. Hydroperitoneum.

AUTOPSY 535 A. White male, age 53. Hydrothorax. Chronic interstitial splenitis. Chronic productive peri-splenitis. Chronic adhesive peritonitis. Cancer of stomach.

AUTOPSY 563 A. White male, age 50. Emaciation. Chronic adhesive peritonitis. Cancer of pylorus. Pyloric stenosis, gastrectasis. Chronic adhesive peri-gastritis. Edema of lungs. Chronic perisplenitis with calcification.

AUTOPSY 700 A. White male, age 50. Emaciation. Scirrhus cancer of pylorus. Stenosis of pylorus. Secondary cancer of liver. Fatty degeneration of heart and kidneys. Cerebral softening.

AUTOPSY 861 A. White male, age 58. Emacia-

tion. Cancer of pylorus. Metastasis to liver. Chronic interstitial splenitis and nephritis.

AUTOPSY 925 A. Negro female, age 48. Chronic adhesive pleuritis. Acute fibrinous pericarditis. Cancer of stomach. Metastases to pancreas, liver. Gastrectasis. Compression of common bile-duct. Dilatation of gall-bladder. Chronic adhesive peritonitis. Circumscribed acute peritonitis.

AUTOPSY 1035 B. White male, age 46. Emaciation. Acute suppurative peritonitis. Primary cancer of pylorus. Perforation of stomach. Chronic catarrhal gastritis. Secondary cancer of lungs and liver. Chronic parenchymatous nephritis. Hyperplasia of abdominal lymph nodes.

AUTOPSY 979 A. White female, age 58. Scirrhus cancer of pylorus. Pyloric stenosis. Gastrectasis. Chronic catarrhal gastritis.

AUTOPSY 983 A. White female, age 73. Emaciation. Hydrothorax. Atheroma of aorta. Hydroperitoneum. Cancer of stomach. Secondary cancer of liver, pancreas, lungs, kidneys and peritoneal lymph nodes. Fibroid of uterus.

AUTOPSY 1035 B. White male, age 46. Emaciation. Dilatation of superficial veins of thorax. Hyperplasia of axillary lymph nodes. Recent laparotomy wound. Chronic adhesive peritonitis. Primary cancer of pylorus. Secondary cancer of liver, omentum and transverse colon. Fibrinous peri-hepatitis. Acute suppurative peritonitis. Fatty degeneration of heart. Chronic parenchymatous nephritis. Early atheroma of aorta.

AUTOPSY 1067 B. White male, German, age 75. Emaciation. Unequal pupils. Arcus senilis. Posterior luxation of tibia at knee. Pretibial cicatrices. Chronic adhesive peritonitis. Sclerotic splenic capsulitis. Chronic interstitial splenitis. Primary cancer of stomach. Secondary cancer of liver, lungs and abdominal lymph nodes. Chronic parenchymatous nephritis. Chronic myocarditis.

AUTOPSY 1115 B. White male, Denmark, age 66. Emaciation. Hyperplasia of superficial lymph nodes. Primary cancer of lesser curvature of stomach. Invasion direct of pancreas, liver and omentum. Secondary cancer of liver, gastro-hepatic and retro-peritoneal lymph nodes. Edema of lungs. Chronic interstitial nephritis. Brown atrophy of heart. Atheromatous aortitis.

AUTOPSY 1194 B. White male, Ireland, age 46. Emaciation. Hydro-peritoneum. Cancer of the stomach. Metastases to perigastric lymph nodes and peritoneum. Fibroid myocarditis. Brown atrophy of heart. Edema of lungs. Croupous pneumonia (gray). Fibrosis of spleen. Parenchymatous nephritis.

AUTOPSY 1253 B. White female, age 70. Emaciation. Sclerotic epicardial plaques. Chronic (calcified) aortic and mitral endocarditis. Aortic and mitral stenosis and insufficiency. Dilatation right auricle. Coronary arterio-sclerosis. Edema of lungs. Chronic hypertrophic gastritis. Scirrhus cancer of pylorus. Chronic fibrous splenitis. Chronic

passive congestion of kidneys. Chronic adhesive peritonitis. Acute purulent peritonitis. Atheroma of aorta with calcification.

AUTOPSY 1275 B. White male, U. S., age 70. Edema and congestion of lungs. Chronic adhesive pericarditis. Chronic myocarditis. Fatty degeneration of heart. Aneurysm of left ventricle. Acute fibrinous pericarditis. Nodular sclerosis of aorta. Sclerotic aortic and mitral valvulitis. Chronic interstitial splenitis. Chronic interstitial nephritis. Passive congestion, fibrosis and atrophy of liver. Adeno-carcinoma of stomach. Encephalomalacia. Chronic pachy-meningitis.

AUTOPSY 1336 B. White male, Ireland, age 65. Pretibial cicatrices. Chronic hyperplastic cystitis. Cancer of prostate. Edema and congestion of lungs. Hypostatic pneumonia. Healed tubercular foci of both apices. Emphysema of lungs. Brown atrophy of heart. Chronic fibroid myocarditis. Hypertrophy of right ventricle of heart. Chronic interstitial splenitis and peri-splenitis. Arterio-sclerotic kidneys. Cancer metastasis to kidneys. Fatty infiltration of liver. Angioma of liver. Secondary cancer of liver. Chronic peri-hepatitis. Hypertrophy and dilatation of stomach. Cancer of stomach. Catarrhal enteritis.

AUTOPSY 1359 B. White male, Germany, age 60. Decubitus. Purpuric eruption over back. Acute fibrinous peritonitis. Chronic adhesive peritonitis. Chronic adhesive pleuritis. Sclerotic epicardial plaques. Chronic fibroid tuberculosis of lungs. Anthracosis, congestion and edema of lungs. Cancer of the lesser curvature of the stomach. Atheroma of aorta and iliac arteries.

AUTOPSY 1426 B. White male, Germany, age 63. Chronic adhesive pleuritis. Chronic fibroid tuberculosis of right apex. Pulmonary congestion and edema. Cardiac degeneration with edema. Cancer of stomach. Ulcerative colitis. Cyanotic induration of kidneys.

AUTOPSY 1481 B. White male, Ireland, age 46. Edema of extremities. Chronic adhesive pleuritis, peri-splenitis, peri-hepatitis and peri-cholecystitis. Sclerotic aortic, mitral and mural endocarditis. Nodular sclerosis of aorta. Emphysema of lungs. Cyanotic induration of spleen. Atrophy of right kidney with compensatory hypertrophy of left. Scirrhus cancer of stomach. Metastases to retro-peritoneal lymph nodes.

AUTOPSY 1483 B. White male, Germany, age 53. Chronic adhesive pleuritis. Chronic myocarditis with degeneration. Coronary arterio-sclerosis. Chronic indurative valvulitis. Healed tubercular foci of both lungs. Edema, hypostatic congestion and compensatory emphysema of lungs. Chronic interstitial nephritis with superimposed cloudy swelling. Cloudy swelling of liver. Sclerosis and atheroma of aorta. Cancer of pylorus. Pyloric stenosis with gastrectasia. Chronic adhesive peri-gastritis.

AUTOPSY 1553 B. White male, U. S., age 58. Arterio-sclerosis. Mild pleuritis. Croupous pneu-

monia. Retention cysts of kidneys. Chronic interstitial nephritis with parenchymatous degeneration. Hypertrophy of prostate. Cancer of pylorus.

AUTOPSY 1617 B. White male, U. S., age 68. Emaciation. Hypertrophy of left ventricle with general dilatation of heart. Aortic and mitral valvulitis. Chronic adhesive pleuritis. Emphysema of lungs. Squamous cell cancer of stomach. Arterio-sclerosis. Chronic interstitial nephritis. Nephrolithiasis. Chronic passive congestion of liver.

AUTOPSY 1630 B. White female, Italy, age 40. Emaciation. Jaundice. Adeno-carcinoma of pylorus involving the head of the pancreas. Metastasis to liver. Chronic fibroid and calcified peri-splenitis with fibroid spleen. Chronic diffuse nephritis. Infarcts of spleen. Chronic interstitial pancreatitis. Brown atrophy of heart. Emphysema and infarcts of lungs. Distention receptaculum chyli. Chronic mitral valvulitis.

AUTOPSY 1643 B. White male, U. S., age 74. Emaciation. Healed tuberculosis and congestion of lungs. Chronic adhesive pleuritis. Simple hypertrophy of heart. Chronic aortic and mitral valvulitis. Arterio-sclerosis. Congestion of bladder, pancreas and spleen. Adeno-carcinoma of cardiac end of stomach. Chronic interstitial nephritis.

AUTOPSY 1684 B. White male, U. S., age 68. Brown atrophy of heart. Chronic mitral and aortic valvulitis. Edema and congestion of lungs. Metastatic hypernephroma of lungs. Atrophy of spleen. Chronic interstitial nephritis. Hypernephroma of kidneys, renal veins and inferior vena-cava. Chronic hypertrophic gastritis. Cancer of stomach. Ulcerative tubercular enteritis. Localized hypertrophy of sub-mucosa of colon with carcinoma. Cellulitis of right leg.

AUTOPSY 1729 B. White female, England, age 56. Irreducible umbilical hernia. Chronic adhesive pleuritis. Dilatation of heart. Cancer of stomach. Metastases to liver and mesenteric lymph nodes. Chronic interstitial nephritis. Gelatinous edema of brain. Clinical diagnosis Adiposis Dolorosis.

AUTOPSY 1747 B. White male, Germany, age 64. Emaciation. Emphysema and edema of lungs. Healed tuberculosis of right lung. Chronic adhesive pleuritis. Hydro-thorax. Sclerotic epicardial plaques. Fatty degeneration of myocardium with dilatation of the heart. Adeno-carcinoma of stomach. Metastasis to liver. Fatty infiltration of liver. Chronic peri-splenitis. Chronic interstitial splenitis. Chronic interstitial nephritis. Fibrosis of pancreas and adrenals. Artero-sclerosis.

AUTOPSY 1859 B. White female, Ireland, age 40. Congestion and edema of lungs. Double hydro-thorax. Brown atrophy of heart. Hypostatic pneumonia. Congestion of liver. Chronic fibrous splenitis. Scirrhus cancer of stomach. Metastases to retro-peritoneal lymph glands, kidney and spleen. Chronic interstitial nephritis. Arterio-sclerosis.

AUTOPSY 1966 B. White female, Italy, age 44. Croupous pneumonia. Chronic adhesive pleuritis, right side. Chronic aortic and mitral valvulitis. Cancer of lesser curvature of stomach with perforation of anterior and posterior walls. Chronic interstitial nephritis. Fatty cirrhosis of liver. Chronic interstitial splenitis. Fibroid of uterus. Cyst of right ovary.

AUTOPSY 2028 B. White male, U. S., age 42. Chronic interstitial nephritis with cloudy swelling. Chronic mitral and aortic valvulitis. Edema and congestion of lungs with beginning hypostatic pneumonia. Chronic adhesive pleuritis, left side. Chronic adhesive peritonitis. Cancer metastasis to peritoneum. Fatty cirrhosis of liver. Medullary cancer of stomach.

AUTOPSY 2145 B. White male, age 76. Hematoma of scalp. Right sub-dural hemorrhage. Chronic adhesive pleuritis. Congestion and edema of both lungs. Cloudy swelling of myocardium. Dilatation of heart. Sclerotic aortic and mitral valves. Passive congestion and cloudy swelling of liver. Senile atrophy of spleen. Chronic interstitial nephritis. Chronic atrophic gastritis. Carcinomatous ulcer of pylorus. Congestion of intestines. Atheroma of pericardium. General arterio-sclerosis.

AUTOPSY 2174 B. White male, Germany, age 57. Fatty degeneration of heart. Patulous foramen ovale. Emphysema and edema of lungs. Healed tubercles of lungs. Secondary cancer of both adrenals. Chronic diffuse nephritis. Cancer of stomach with metastases to liver and abdominal and mediastinal lymph nodes.

AUTOPSY 2229 B. White male, Ireland, age 75. Chronic adhesive pleurisy. Passive congestion of lungs. Advanced cloudy swelling of pericardium. Sclerotic mitral and aortic valvulitis. Passive congestion and cancer metastasis of liver. Chronic fibrous splenitis and peri-splenitis. Adeno-carcinoma of stomach with hemorrhage into the stomach. Direct cancerous involvement of pancreas. Post-mortem digestion of adrenals. Chronic interstitial nephritis. Arterio-sclerosis.

AUTOPSY 2241 B. White male, Germany, age 45. Diffuse cancer of stomach with metastases to neighboring lymph nodes and peritoneum. Congestion and edema of lungs. Healed tubercles of left apex. Atheroma of aorta and coronary arteries. Chronic indurative pyelitis and ureteritis of both sides, apparently the result of renal concretions. Congestion of liver. Acute aortitis of abdominal aorta.

AUTOPSY 2246 B. White male, England, age 60. Fatty heart. Anthracosis and emphysema of lungs. Fatty infiltration of liver. Primary ulcerated carcinoma of stomach with metastases to contiguous structures.

113 SOUTH 20TH STREET.

THE SPREAD OF INFECTION AND EDEMA IN THE SOFT TISSUES OF THE HEAD AND NECK FROM THE PRIMARY FOCUS.

In general, the following are the directions taken by a spreading infection:

The Scalp; Frontal Region.—Slightly backwards over the scalp, but mainly forwards and downwards over the eyebrows, causing edema of the lids and closing of the eyes. Edema of the face below the eyes is rare.

Parieto-temporal Region.—Backwards and forwards over the scalp, but more forwards on account of looseness of pericranial attachment. Edema of lids is not frequent, but there may be a decided puffiness of one or the other side of the face.

Occipital Region.—Upwards over the scalp and towards the mastoid regions; practically never downwards over the neck.

Supra-orbital Region and Orbit.—Over frontal region but little or not at all over face.

Malar and Superior Maxillary.—Upwards towards eyes, causing edema of lids but never spreading downwards to neck, unless very advanced.

Nasal.—To orbital, frontal and malar regions; seldom downwards over face.

Upper and Lower Lip.—Edema of face and lids seldom spreads downwards to neck.

Submaxillary.—Slight edema of face; swelling of neck; edema frequently spreads under chin to other side.

Neck, Anterior to the Sterno-Mastoid Muscles.—The tendency is forwards and across the median line, rather than backwards, upwards to the submaxillary region rather than downwards. Even in very severe infections, the lower part of the neck was little or not at all affected.

Behind the Sterno-Mastoid Muscle.—Affections are very apt to remain well localized.

The importance of a knowledge of the direction in which an infection in the regions mentioned is apt to spread lies in the fact that incision should always be directed so as to drain and prevent spreading of the infection to the areas above mentioned; drainage should be established in the part of the wound nearest to these areas. By a careful adherence to the principles thus laid down, secondary incisions have become less frequent.—C. A. ELBERG, in *Mt. Sinai Hospital Reports*.

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WALTER M. BRICKNER, M.D., Editor

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THE DANGERS OF DIAGNOSTIC REFINEMENTS.

Modern medicine is justly proud of the increased precision of diagnosis due to more careful and analytical study of disease, coupled with the introduction of various methods and instruments of precision. In the enthusiasm for extending our diagnostic powers, it is to be feared that occasionally we lose sight of the fact that a diagnosis is not an end in itself, and that treatment, to be successful, must sometimes be instituted in advance of a diagnosis. In certain of the more serious exigencies that confront us, it is indefensible to wait for certainty. The man who treats disease symptomatically is nowadays in rather bad repute, but he is scarcely less dangerous than he who temporizes and vacillates in the presence of serious conditions because he cannot assure himself definitely of the pathological basis. The "court and alley" doctor will, often, seize the opportune moment, while our more learned brother is musing upon possibilities. In short, there are not a few cases in which we must act, and act quickly and energetically if life is to be saved or irreparable injury prevented, in which our reason must lie in minor symptom-complexes, or in an indefinite examination. Such cases form a considerable percentage of the practice of the surgeon. They are relatively less numerous in the experience of the individual practitioner. So

it comes that the surgeon sees the necessity while the general practitioner lags behind. But the surgeon cannot apply his dearly gained wisdom except through the physician who sees the cases first. So in tumors of the breast. Year in and out those who are best qualified to know, chorus the fact that in early stages, simply from the history and examination, no man can make with any approach to certainty, the differentiation between benign and malignant growths. In this connection Maurice Richardson says: "Distrust of my own powers of diagnosis increases with increasing experience." Bloodgood has clearly shown that the gross and, occasionally, the microscopic appearance of a tumor of the breast must be invoked to our aid if we would make a diagnosis and apply proper treatment in the early and curable stage. Still we find many men who will sleep o'nights while they are waiting to see whether further development will make them sure of a diagnosis. The patient is fortunate if she is not told to apply a counter-irritant which, if the tumor is malignant, as there are seven chances in ten that it is, will cause more rapid development. The counterirritants do not necessarily mean the use of iodine or mercurial preparations alone, but also the *x*-ray. The *x*-ray is dangerous in breast growths; too often the physician and the *x*-ray specialist, not of necessity a clinician, make the decision in favor of this form of treatment. Or, worse, massage may be recommended, which will disseminate the cancer cells and hasten the very metastasis we dread. It is a fact that in this condition the net gain of lives saved would be great if students were never taught the signs and symptoms of malignancy in the female breast but simply told that every tumor should be operated on as soon as discovered.

The status of cancer of the uterus is similar. Certainty of diagnosis by symptoms and examination alone means failure of cure.

Cancer of the stomach, once in the hands of the specialist, with his test meal, glass beads, gastroduodenal ulcer, counting the leucocytes, hour by hour, thinking thereby to know whether the process is progressing or subsiding, which in a grim resemblance to Kipling's Vampire, he

"never could know

And could not understand."

There are even some who, in the presence of

concealed hemorrhage, will think of the hemoglobinometer rather than the scalpel, and will occupy themselves with a prognosis as to the relative probability of the patient's bleeding to death, rather than with making it impossible for the hemorrhage to continue.

Fortunately in these latter examples the lesson is widely diffused and it is a slander on the profession to assert that such practices are general. In carcinoma, however, the case is quite different. Thousands of lives are lost annually owing to the unwillingness to act upon suspicion before a diagnosis can be made. In these cases uncertainty is the signal to act rather than to delay, and, unless this is recognized, the holocaust will continue until a certain means of early diagnosis of malignancy is found. That, unfortunately, is not even upon the horizon.—JOHN B. DEEVER.

EXPLORATORY LAPAROTOMY.

A European physician writing of his impressions of American hospital methods made the criticism, (which was reprinted in at least one of our newspapers), that in this country surgeons too often indulge in abdominal exploration. If it be true that we have fallen into the way of making abdominal diagnosis with the knife, of seeking visual demonstration before exhausting all the reasonable (and for the individual case, expedient) means of clinical diagnosis, then the criticism is a just one. Intelligent and patient study of signs and symptoms will usually direct the experienced surgeon to a correct diagnosis. On the other hand, exploratory laparotomy is often a justifiable means of diagnosis, deserving of proper consideration. Just as in cases of suspected gastric carcinoma, so in other abdominal diseases it is unfair to the patient to wait for positive signs or to rely entirely on complicated and sometimes misleading laboratory tests.

In the acute cases diagnosis presents fewer difficulties, but of chronic abdominal diseases and especially of tumors, the diagnosis, in spite of every test, is often possible only on the operating table. Even when the diagnosis is not clear, the indication for operation may be; and an autopsy *in vivo* may prevent an autopsy *post-mortem*!

Visual demonstration is the most reliable of all diagnostic determinations—hence the value of cystoscopy, of skiagraphy, of exploratory laparotomy. But he who rushes at once to these demonstrations before attempting to establish a conclusion by bedside examination, appropriate analyses and deduc-

tive reasoning will soon blunt the edge of his diagnostic discernment. Exploration as a means of diagnosis, usually immediately precedent to surgical treatment, has an appropriate place in the armamentarium of those whose clinical training has not been spoiled, and such a place it will continue to occupy as long as abdominal diagnosis presents elements of doubt.—W. M. B.

Surgical Suggestions.

When operating on a direct inguinal hernia undue enthusiasm to find a sac may lead one into the bladder.

A tender swelling in the submental angle may confuse the physician who does not recall that such a condition may arise from exposure to cold weather.

The best means of securing a painless end-bearing amputation stump consists in covering the raw surface of the bone, whenever there is no contra-indication, with an osteo-periosteal flap, after the manner of Bier.

The pulse rate is a very important guide in determining the necessity for operation in acute appendicitis; but sometimes it should be altogether disregarded. If distinct pain and tenderness have not abated after twenty-four to thirty hours (especially if vomiting and more or less rectus rigidity coexist, but even without these) it is proper to operate without waiting further, no matter what the temperature and pulse rate; a gangrenous appendix may be found in a patient whose pulse is 70 and temperature 100°!

Subacromial (subdeltoid) bursitis is probably the most frequent single cause of persistent shoulder disability after slight trauma. Localized tenderness, frequently disappearing when the arm is raised, is always present in the acute cases. Limitation of abduction and external rotation—by pain or spasm or adhesions—is usually present. In some cases pain or clicking is felt at the end of motion. A skiagraph will definitely establish the diagnosis if it shows thickening or calcareous deposit in the bursa, but a negative x-ray finding does not exclude bursitis. The condition must be differentiated from neuritis, tuberculosis, arthritis, fracture, etc.

Book Reviews.

The Principles of Pathology. Volume I, General Pathology. By J. GEORGE ADAMI, M.A., M.D., LL.D., F.R.S., Professor of Pathology in McGill University, Montreal. Octavo; 948 pages; 322 engravings and 16 plates. Philadelphia and New York: LEA AND FEBIGER, 1908. Cloth, \$6.00, net.

Not in years has a work impressed us as deeply as this. While not carrying a new message, this book is a pioneer and fills a distinct gap in the literature of medicine. Books that record and describe pathological lesions and phenomena are numerous, but a work which, in addition, aims to analyze in an orderly and comprehensive manner the laws and principles governing the production of these phenomena has never, to our knowledge, been written. To do full justice to the scope of this book, the term "pathology" must be used in its broadest sense as applied to the study of disease from the standpoint of every phase of cellular activity. In this sense, this book can be regarded as a philosophy of disease, comparable to the "principia" of other sciences, and as the author rightly sets forth in his preface, it should serve as a training in medical thought.

It is manifest that it requires a mind of a very high order to write a work of this character. Adami has amply proven that he is well qualified. His experience is large and his judgment mature. He is widely read and bears a reputation as a thinker of originality and precision. But the qualification that he possesses above all is a catholicism of interests and training that is truly amazing. Adami is not only a pathologist, but a biologist, chemist, embryologist, bacteriologist and physiologist of unusual ability. Combined to these qualities is a breadth of grasp which enables him to marshal the observations resultant from these activities to their fullest use.

Inasmuch as the cell and its changes constitute the basis of pathological activity, Adami naturally begins with a review of cell structure and physiology. In this section of 164 pages, entitled *prolegomena*, anatomy, physiology, chemistry, multiplication, adaptation, differentiation, fertilization and inheritances are dealt with exhaustively. For purposes of explanation of cellular activities, the author has ingeniously evolved what he calls the biophoric theory. This theory presupposes that all cells have unsatisfied affinities, which take up ions from the environment, resulting in the formation of side chains.

The second section deals with the causes of disease. Adami begins with a discussion of inherited morbid conditions; and the explanation of monstrosities, especially from the embryological standpoint, is given with great detail. He then proceeds to the causes of post-natal acquirement of diseases. The general principles of bacterial and protozoal infections are discussed in a masterly manner and the lacunæ in our present knowledge are clearly indicated. The succeeding chapters on the endogenous intoxications, such as diabetes, gout, obesity, eclampsia, etc., reveal knowledge of the most recent studies upon these subjects. This section concludes with two chapters on predisposition and susceptibility.

The third section is divided into two parts; the first deals with the morbid and reactive processes and comprises chapters on inflammation, systemic reaction, immunity and syncope, shock and collapse. Adami has long been known as an authority upon the pathology of inflammation, and it need scarcely be said that the subject is handled in consummate style. The chapter on immunity covers 78 pages and affords an admirable and clear survey of this very difficult subject. The second part deals with tissue changes and after discussing hypertrophy, regeneration, grafting and metaplasia the author devotes nine chapters to the important subject of tumors. Adami employs a classification of his own which appears to us eminently serviceable and logical. The entire conception and exposition of this subject is most unconventional, and these chapters afford interesting and suggestive reading. The theories of neoplasia are outlined and discussed

and a chapter is devoted to the subject of cysts. The author then discusses the regressive tissue changes and concludes with accounts of calcification, calculi, pigmentation, necrosis and death. The last is beautifully written.

The work throughout shows the most careful preparation and we are not surprised in the least that this occupied twelve years. Even when dealing with the most complicated subject, the author is never obtuse. His style is one of distinction.

The illustrations (unfortunately the originals were destroyed at the McGill University fire in 1907) are excellent, and those that have been borrowed have been selected with taste. The plates are uncommonly good. The work is not overburdened with references to the literature, but those that are given have been selected with judgment. Typographically, the book is all that can be desired.

The book is manifestly the epitome of the author's life work, and however much one may disagree with the author, it cannot be denied that his work will command the profoundest respect. It is written on a rather too lofty plane to be recommended to the very beginner in pathology, but as a work of reference or as a suggestive basis for medical thought and the scientific study of diseased processes, it is, to our view, unequalled in any language. Indeed, it is a work of which Anglo-Saxon medicine may well be proud.

[Volume II, *Systemic Pathology*, by Adami and Nicholls, will be reviewed at an early date.]

Clinical Manual for the Study of Diseases of the Throat. By JAMES WALKER DOWNIE, M.B., F.F.P.S.G., Lecturer on Diseases of the Nose and Throat, University of Glasgow; Surgeon for Diseases of the Nose and Throat, Western Infirmary; Hon. Aurist, Royal Hospital for Sick Children; Member of the Council, and Examiner in Otology and Laryngology for the Fellowship of the Faculty of Physicians and Surgeons, Glasgow. *Second Edition.* Octavo; 432 pages; 104 illustrations. Glasgow: JAMES MACLEHOSE AND SONS, 1909. Price, \$3.25.

This second edition shows extensive revision. A considerable amount of new matter has been added, chiefly as the result of the many important advances in methods of diagnosis and treatment which have been made since the appearance of the first edition. The book was originally prepared for students and practitioners and it has been the author's intention in this second edition to make it an even more practical guide for those men who desire to gain some knowledge of the diseases of the fauces, pharynx and larynx.

While, in the main, the work is to be commended, we regret that more attention has not been paid to the descriptions of the technic of several important procedures. Tonsillotomy is advised as the operation of choice and "enucleation" of the tonsil is merely mentioned as "an operation practised by the ancients, and reintroduced to the notice of the profession at intervals." Again, but a brief description is given of the laryngoscopes, bronchoscopes, etc., of Killian and Jackson and the wornout procedures of indirect laryngoscopy are described in detail. In the light of modern bronchoscopy the following treatment of foreign body in the lung is hardly applicable. "By inversion, and a forced expiratory effort, the foreign body may be expelled, even from one of the smaller bronchi; and later, when an abscess has formed, the body may be discharged along with the pus by this method. Sometimes it may be reached through the bronchoscope, but if not, it is often better to leave the foreign body alone and await developments, rather than resort to external operation for its removal."

Aside from the criticisms just mentioned, this volume will be found of value to those who wish merely to gain a working basis for throat work in general practise. It is well written, well printed and well illustrated. The divisions of the book into eighteen definite chapters, based on pathological and anatomical findings, makes it a ready reference. The colored plates, of which there are seventeen, are excellent.

Diseases of the Nose, Throat and Ear. By CHARLES HUNTOON KNIGHT, A.M., M.D., Professor of Laryngology, Cornell University Medical College; Surgeon, Manhattan Eye, Ear and Throat Hospital; Consulting Laryngologist, New York State Hospital for Crippled and Deformed Children, etc.; and W. SOHIER BRYANT, A.M., M.D., Consulting Otologist, Manhattan State Hospital; Senior Assistant Surgeon, Aural Department, New York Eye and Ear Infirmary, etc. *Second Edition.* Octavo; 631 pages; 239 illustrations. Philadelphia: P. BLAKISTON'S SON & Co., 1908. Price, \$4.50 net.

The second edition of Dr. Knight's book on "Diseases of the Nose and Throat" has been greatly enlarged by the addition of 224 pages on the ear, written by Dr. Bryant. Numerous minor changes have been found necessary and important additions have been made in the chapters on deviated septum and diseases of the accessory sinuses.

The first twenty-four chapters deal with the nose and throat. The more important procedures which have but lately come into vogue are merely referred to if such procedures have not become established; others are described in detail, where no doubt can be entertained of their unqualified acceptance.

Dr. Knight is particularly open-minded in his attitude toward several important questions which, as yet, are far from settled. His references to various authors show the amplitude of his reading for the compilation of the work. Especial reference is made to the discussion of the ethmoidal cells and the much-discussed subject of nasal polypi. "In view of the frequency of ethmoid disease, it is rather surprising that such an extreme difference of opinion should prevail as to its origin and nature. Bosworth regards ethmoiditis as the most common form of sinus inflammation, while the post-mortem records of Lapalle show the occurrence of ethmoidal empyema only six times, frontal five, sphenoidal nineteen, and maxillary forty-eight times in fifty-five cases of sinus disease. In every instance empyema of other sinuses co-existed—the maxillary five times, the sphenoidal four times and the frontal twice." Referring to nasal polypi he says: "The theory of Woakes that nasal polypi are a direct consequence of a necrosing ethmoiditis has met with much opposition and would seem to be conclusively refuted by those cases of polyp seen to spring from the surface of the nasal septum, or from the wall of a sinus, in which there is no suspicion of bone disease. The theory of bone origin of polyps has an advocate in Lambert Lack, who defines a nasal polyp as a localized patch of edematous mucous membrane dependent upon subjacent bone disease." The chapter on deviations of the nasal septum is rather extensive. We are glad to see that the author insists on the seriousness of the operation for its correction and refers to a case reported by Levy where fatal sepsis occurred and another by Freer where a suppurative of the sphenoidal sinus took place after submucous resection.

The last thirteen chapters, written by Bryant, deal entirely with the ear. It is seldom that we see in American literature, particularly on a special subject, such a concise, comprehensive, reasonable and clear interpretation of all the salient points necessary to a clear understanding of matters which often are jumbled and confused in other text-books.

A Practical Guide to the Examination of the Ear. By SELDEN SPENCER, A.B., M.D., Instructor of Otology in Washington University; Aural Surgeon to the Martha Parsons Free Hospital for Children. With an introductory chapter by N. SPENCER, M.D., LL.D., Professor in Otology in Washington University. Duodecimo; 66 pages; five plates and twelve illustrations in the text. St. Louis: C. V. MOSBY Co., 1908.

This brochure is meant essentially for students' use. The explanations are to the mark. There is no verbosity. The plates are large and clear and would well grace any text-book.

A System of Operative Surgery. By Various Authors. Edited by F. F. BURGHARD, M.S. (Lond.), F.R.C.S. (Eng.), Teacher of Operative Surgery in King's College, London; Surgeon to King's College Hospital; Senior Surgeon to the Children's Hospital, Paddington Green. In four volumes. *Volume II.* Large octavo; 720 pages; 317 illustrations. London: OXFORD UNIVERSITY PRESS, 1909. Price, \$10 per volume.

This, the second volume of Burghard's elaborate and costly "system of operative surgery," deals with the surgery of the digestive tract and, in addition, with operations for tuberculous affections of the bones and joints, which it was originally intended to include in Volume I.

Nine British surgeons are the collaborators in this volume. Harold J. Stiles, of Edinburgh, is the author of Section 1, consisting of 134 pages descriptive of type operations for *tuberculosis of the bones and joints*. Section 2 is devoted to *operations for hare-lip and cleft palate*, by Edmund Owen; *operations for cancer of the lips and face*, by G. Lenthal Cheatle, and *operations upon the jaws*, by C. H. Fagge, all London surgeons. Cleft palate is dealt with rather briefly, Owen recommending the operation of Brophy for early cases. Section 3 consists of *operations upon the tongue, tonsils and pharynx*, by H. T. Buttin, London, and *operations upon the esophagus*, by C. H. Fagge. Section 4 covers *operations upon the stomach*, by B. G. A. Moynihan, Leeds; *operations upon the intestines*, by G. H. Makins; *operations for hernia*, by Arthur E. Barker, and *operations upon the rectum and anus*, by T. Swinford Edwards, of London. Section 4, and especially its parts 1 and 2, dealing with operations on the stomach and intestine, will be found particularly satisfactory for reference purposes. It is complete and modern, well written and freely illustrated. Indeed, it is a pleasure to acknowledge that in this volume even more noticeably than in the two whose appearance preceded it, the authors have shown a painstaking effort to portray the best in modern operative surgery as developed in all lands, affording a striking contrast to some other English works which are too "insular" for the general English-reading profession.

Altogether, this volume impresses us as the best of the three thus far issued. It is to be hoped that volume four will be equally good.

The Sexual Disabilities of Man and Their Treatment. By ARTHUR COOPER, Consulting Surgeon to the Westminster General Dispensary, etc. New York: PAUL B. HOEBER, 1909. Price, \$1.00 net.

This practical little book is based on the author's experience during a practice of the genito-urinary specialty for thirty years. It does not deal with the organic diseases of the genital tract except in so far as they affect the sexual functions. The writer does not aim at an exhaustive study, but takes up the changes in and treatment of sterility and the physiology and treatment of impotence in a simple, concise fashion.

Primer of Sanitation. Being a Simple Work on Disease Germs and How to Fight Them. By JOHN W. RITCHIE, Professor of Biology, College of William and Mary, Virginia. Duodecimo; 200 pages; 111 illustrations. Yonkers, N. Y.: WORLD BOOK Co., 1909.

A most useful primer for school children. The illustrations, by Karl Hassmann, are well calculated to impress the young mind.

Books Received.

The Physician's Visiting List (Lindsay & Blakiston's) for 1910. Fifty-ninth year of publication. Philadelphia: P. BLAKISTON'S SON & Co.

Progress in Surgery.

A Résumé of Recent Literature.

A Case of Hypophysis Tumor with Operative Recovery (Ein Fall von Hypophysis-Tumor mit Operative Heilung). THEODOR KOCHER, Bern. *Deutsche Zeitschrift für Chirurgie*, Vol. 100.

In December, 1906, immediately following a fall, the patient complained of generalized pains and severe headache. The latter, with recessions, persisted, and in the course of several months increased; at the same time weakness of the extremities was observed, occasional vomiting spells set in, menstruation became scanty and later stopped. In May, 1907, paresthesiae and pain in the hands were first observed; gradually the hands became greatly swollen; a little later a similar evolution occurred in the feet. Still later the face, and especially the eyelids became swollen. About this time weakness of vision and diplopia were noted. The patient complained of loss of memory. Sugar being found in the urine, treatment for diabetes was carried out for several months.

When the patient came under Kocher's observation in December, 1908, her general condition was fair, with well-developed panniculus. Hands, feet, face were swollen, but not edematous. There was no ataxia; sensations and reflexes were normal. The cranial nerves were normal, except the optic. Marked bilateral choked disc with profound disturbance of vision were found; an examination made several months before had shown a bitemporal hemianopsia. The x-rays demonstrated very clearly great widening of the sella turcica. The urine contained 4 per cent. sugar.

The operation, performed January 9, 1909, was done after the nasal route of Schloffer, with some modifications. The incision was made to detach the cartilaginous from the bony nose. By chiseling through the superior maxillae and lacrimal bones, the bony aperture was widened. The septum being submucously resected, a powerful dilating speculum was carried between the flaps to the base of the skull. The opening of the blades crushed the ethmoidal cells, providing sufficient room for further manipulations. The latter consisted in removing a fragment of the sella turcica, when the tumor at once presented. The opening was enlarged in the longitudinal axis with rongeurs, the transverse enlargement being gingerly performed with elevators (for fear of wounding the cavernous sinuses). The exceedingly soft, reddish gray tumor mass had to be removed in fragments. Packings into the cavity were carried out through the nostrils.

Two days after operation, severe headache and vomiting, constant symptoms before operation, almost entirely disappeared. Soon after, the paresthesiae on the hands and feet were gone. Two weeks after operation, the hands had become decidedly smaller. The amount of sugar in the urine was less. The patient had been feeling well, had been up and about, when, on February 2 she suddenly complained of severe headache, vomited, and died in coma three hours later.

Examination of the tumor showed a very vascular round-celled sarcoma. At the autopsy, the tumor remains were of the same appearance as that portion removed; the walls of the cavernous sinuses, the clivus, Blumenbach's, the left lateral ventricle were invaded by the growth. The thymus was very large; the thyroid, abnormally small.

Congenital Pseudarthrosis of the Leg Cured by an Osteoperiosteal Graft (Pseudarthrose Congénitale de la Jambe Guérie par une Greffe Ostéopériostée). M. FROELICH. *Annales de Médecine et Chirurgie Infantiles*, September 15, 1909.

At a meeting of the medical society of Nancy, Froelich presented a girl six years old who had had a congenital antero-posterior curvature of both bones of the leg; at the age of four, after a very slight trauma, both bones fractured at the height of the curvature. Hyperemia, mechanical irritation, splinting, suture, were all ineffectual in

promoting union; they were tried over a period of 1½ years. Froelich then resected the fractured surfaces of the tibia and placed between them a strip of bone-periosteum 4 cm. long and 2 cm. wide, removed from the healthy tibia. This strip was wedged under the periosteum of each fragment. At the end of two months consolidation was complete, x-rays showed a solid callus, and the child walks perfectly.

Apropos of this case, Froelich has grouped several other similar cases he has had, in two classes: 1. Congenital pseudoarthroses with mobility of the fragments from birth; these are the so-called intrauterine fractures. 2. Pseudoarthroses without mobility of the fragments, cases in which a slight accidental or operative trauma induced mobility in the incurred extremity. All these malformations exist without other external marks than a cutaneous scar at the crest of the curvature. They may be unilateral or bilateral.

The Isolated Tuberculous Tumor of the Ascending Colon (Ueber den Isolierten Tuberculösen Tumor des Colon Ascendens). H. KUETTNER, Breslau. *Deutsche Zeitschrift für Chirurgie*, Vol. 100.

In a report of five cases seen within two years and a review of several cases in the literature, the author points out that, although the ileocecal region is the favorite site for a tuberculous tumor, the latter is found not very rarely in the ascending colon. The great importance of the isolated tuberculous tumor in the ascending colon lies in the fact that its symptoms and physical signs may be—and often are—quite indistinguishable from those of carcinoma in the same region. Nearly every case in the literature (including the writer's cases) has been diagnosed carcinoma, and yet, Küttner believes, tuberculosis will be diagnoses in many of these cases if the condition is borne in mind.

Further Observations Upon the Bismuth Paste Treatment of Tuberculous Sinuses. RIDLON and BLANCHARD, Chicago. *The American Journal of Orthopedic Surgery*, Vol. VII, No. 1.

The writers base their study on the treatment of various tuberculous sinuses by paste in over 126 cases. They did not have a single case of serious bismuth poisoning, using the paste cautiously. The best results were obtained in the treatment of old sinuses of tuberculous joint disease. A group of cases in which the results were good was that in which excision of the tuberculous head of the femur was followed by multiple fistulae.

Bismuth paste should never be used when there is evidence of progressive destruction or when a sequestrum is found by probing or by x-ray examination. Cases of amyloid disease are never improved by injections of bismuth paste. Its continued use is dangerous when large sacs are filled with residual bismuth. The paste should not be employed for sinuses of only two or three months' standing; in these cases the sinus-walls are perforated by the paste and widespread inflammation may follow. The treatment was injurious when the sinuses were surrounded by diseased skin or when they extensively undermined the skin.

Skiagrams show that, in cured cases, the injected bismuth may be unabsorbed for months or even years. Ridlon and Blanchard do not believe that bismuth is the essential constituent of a flooding paste. They therefore employed a combination of white wax, 1 part, vaseline, 8 parts—mixed while boiling—and in a number of cases in which it was used they obtained good results.

Osteomyelitis of the Lower Jaw. H. H. GERMAIN, Boston. *Journal of the American Medical Association*, September 18, 1909.

GERMAIN first describes the anatomic conditions, and remarks that, notwithstanding that these are favorable to infection, the disease is infrequent. It goes without saying that the infectious agent must find its way into the bony substance of the jaw from the teeth. Probably eight-tenths of all cases are due to gangrenous pulps, abscessed teeth,

impacted third molars which furnish a fair number of cases, and pyorrhea alveolaris, noma and gangrenous stomatitis. Traumatism without fracture may act as predisposing causes, as they furnish extravasations which give opportunities for carriers of infection to settle at the point of injury. When fracture occurs it is generally compound, thus furnishing a direct route for infection. Excluding infection from the mouth or outer skin, the remaining cases are the result of blood poisoning. Hematogenous osteomyelitis is the only example we have of pure infection, usually from *staphylococcus aureus*. The others are necessarily mixed infections with mouth bacteria. The symptoms are sudden appearance of gnawing pain, followed by swelling of soft parts and formation of abscess. The abscesses usually discharge through the mouth or skin, relieving pain, but others follow with recurrence of symptoms. Sooner or later part of the bone dies and with the casting off of the dead portion the process usually stops. Another localized form is sometimes seen, with thickening of the jaw and hardening of the soft parts around it. The diffuse form is, as a rule, acute, and the general health is rapidly impaired by septic absorption and interference with the movements of the jaw, affecting speech, mastication and swallowing. Swallowing pus must also impair the general health. As a rule the body and ramus of the bone are reproduced after necrosis but the alveolar process is not. In practically all cases, the pus finds its outlet on the facial side of the mandible, either in the mouth or externally, the line of least resistance being apparently in this direction. Diagnosis is rarely difficult. In all conditions which can be confused with the disease, except syphilis, the treatment is surgical, and there is rarely any difficulty as to the best course to be pursued. The general rule in acute cases affecting the body of the mandible, is to open the facial wall, exposing the inferior dental canal. This gives the best possible drainage and the best results as to deformity. Subacute and chronic cases are a law unto themselves. The treatment in a general way is a hunt for diseased teeth, pus pockets, and sequestra. These cases need careful watching as acute exacerbations often occur and are troublesome and dangerous. Trismus is often annoying and rectal or nasal feeding may be required. External hot applications may sometimes give partial relief. Lymphadenitis and Ludwig's angina may occur and the latter requires immediate surgical intervention. If large portions of the jaw are lost, especially one side, deformity may result. Germain suggests implantation of bone but he has never had a patient who would permit it. Twelve cases are briefly reported.

A Study of the Anatomy and Clinical Importance of the Sacroiliac Joint. FRED. H. ALBEE, New York.
Journal of the American Medical Association, October 16, 1909.

To study the joint function of the sacroiliac articulation, ALBEE carefully dissected fifty specimens and found in each instance a well-marked joint with synovial membrane and cavity, and strong well-formed capsule, as constant in its size and relation as any other joint in the body. His conclusions are:—“1. The sacroiliac articulation has all the elements of a joint and therefore has a similar pathology. 2. It has motion and plays an important rôle in labor. 3. Its variations, according to individual, age or sex, is very slight. 4. Its anatomy is such that drainage into the pelvis is apt to occur, and, therefore, in the event of infection, early posterior drainage is often indicated. 5. Its affections are, undoubtedly, the cause of many obscure and unexplained backaches and persistent sciaticas. 6. The important ligaments of this joint are so placed that the sacrum and the ilium swing open, in the event of a symphysiotomy, as described above, and little permanent damage results, even if the pubic separation has been great enough to rupture the unimportant anterior-inferior part of the capsule. 7. The relaxation of this articulation should be guarded against by support of the lumbar spine with pillows, etc., in cases of protracted post-operative convalescence. Undoubtedly, many can recall instances of Nature's warning, in the form of a convalescent's back-

ache, which the nurse so readily relieved by merely placing a pillow under the lumbar spine.”

Intravenous Local Anesthesia. JAMES MORLEY HITZROT, New York. *Annals of Surgery*, October, 1909.

Hitzrot reports three cases operated upon by Bier's method of intravenous local anesthesia, which he commends as superior to infiltration anesthesia in the types of cases to which it is applicable. The operation was quite painless in all these cases except that in one, an amputation of the leg, the patient had sensations as of electric shocks and the division of the sciatic nerve caused a shock to twist his toe. In one of the cases cocaine was used (30 cc. of a 0.25 per cent. solution) and caused constitutional symptoms. In the other cases Bier's technic was followed exactly.

New Method of Suture of Arteries and Veins (*Nouveau Procédé de Sutures Artérielle et Veineuse*). A. PIROVANI, Buenos Ayres. *Revue de Chirurgie*, No. X, 1909.

The author used his method on the larger vessels of animals in a considerable number of experiments and always found it satisfactory. The technic in brief is: Complete isolation of the vessels to be united. After cutting the vessel across, the adventitia is peeled back. The divided end of the vessel is flattened between thumb and index finger, to convert it into a longitudinal slit. The slit is incised, to a depth of a half centimeter, in the horizontal plane of the vessel; thus superior and inferior limbs of the vessels are made. The superior and inferior arms of each vessel are carefully approximated and a ligature is tied around the base of the superior arms and another around the inferior. Now there are left two flat surfaces to be sutured by a fine suture piercing all coats and the anastomosis is complete.

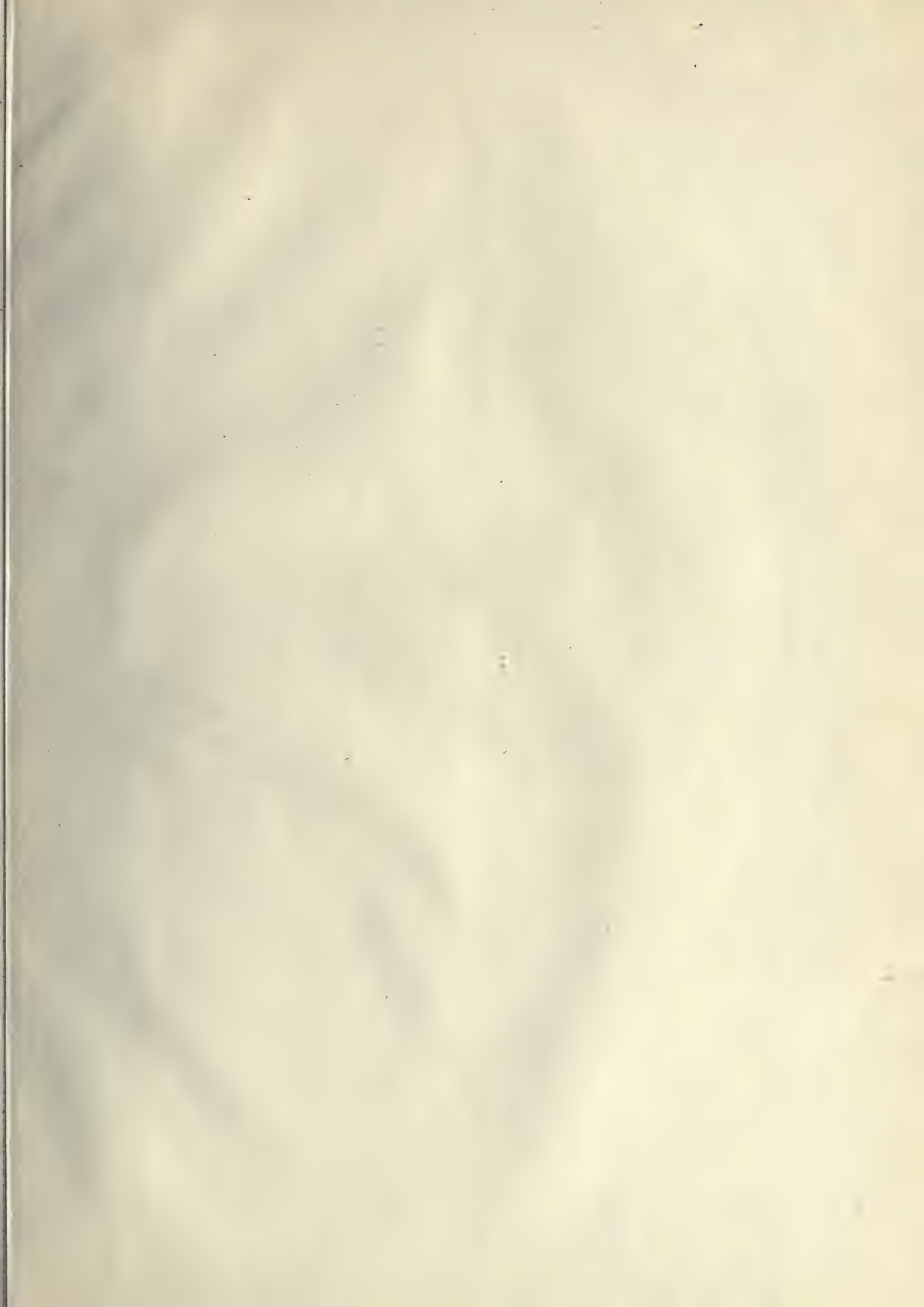
Pirovani claims these advantages for his technic: 1. Transformation of a circular suture into two linear sutures. 2. Half the suturing of the ordinary circular suture. 3. Rapidity and facility of execution. 4. Perfect hemostasis. 5. Minimal alteration of the lumina of the vessels.

The Mesenterio-Mesencolic Ligament and Ileus (*Ligamentum Mesenterio-Mesencolicum und Ileus*). A. NEUMANN, Friedrichshain. *Deutsche Zeitschrift für Chirurgie*, Vol. 101, Parts 3 and 4.

Gruber, in 1848, described under that name a ligament that has a broad attachment to the sigmoid flexure as well as to the adjoining anterior leaf of the mesosigmoid. It narrows, giving the ligament a scythe-form, and ascends across the vertebral column to become lost between the layers of the mesentery. Its edges are sharp, its usual length is four to five inches. There is a great difference of opinion as to the frequency of its presence.

Patient came under Neumann's observation suffering from acute and complete intestinal obstruction; onset five days before. At operation, the greatly distended sigmoid lay in the right hypochondrium. The small intestines were also greatly distended, injected, and in addition actively peristaltic. The remainder of the large intestine (excluding the sigmoid) was collapsed. The lower end of the ileum was also collapsed. The distended small intestine was wrapped in towels and held up out of the abdomen. It could then be demonstrated that the lower part of the small intestine was occluded by a band with a sharp, knife-like edge, which ran from the mesosigmoid to the root of the mesentery. It was about 2 cm. long. The sigmoid was drawn down to its normal position and immediately the ileum and colon became inflated. The place where the ileum at its line of strangulation overlaid the mesenterio-mesenteric ligament showed a sharp, deep furrow. The ligament was divided at its greatest prominence, and the ensuing serosal defect was sutured. The patient made a smooth recovery.

There are two, possibly three, analogous cases in the literature.



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